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Elihu Monroe Peck.

Before his death, it had been often said of Capt. E. M. Peck that his mannerism was strange, but that beneath it was a big, kind heart, and a generous disposition. This sentiment has been heard everywhere in shipping circles during the past week. Capt. Peck was one of the most prominent of lake vessel owners, and was respected among his business associates as few men are in any walk of life. On two occasions within the past few years he might have been elected to the presidency of the Lake Carriers' Association by simply signifying a willingness to accept the office. Although in his seventy-fourth year, Capt. Peck had never been sick until taken with pneumonia at his home in Detroit three weeks ago. The attack was severe from the outset but the announcement of his death on Thursday last was a surprise, as strong hopes of recovery were held out for two or three days previous.

Capt. Elihu Monroe Peck was born in Butternuts, Oneida county, New York, Sept. 14, 1822. Although a large vessel owner, he was best known to the lakes as a ship builder. He was a pioneer in the ship building industry of the lakes. The greater part of his early life was spent in Cleveland, and it was here that he established himself in business and here he designed and constructed more than 100 steam and sail vessels that in their day were among the best on the lakes. Among them may be mentioned the barks Naomi, Sunrise, Golden Fleece, Unadilla, P. C. Sherman, David Stewart, S. V. R. Watson and Northwest, as well as the steamers Fountain City, Evergreen City, Idaho, Winslow, Meteor, Pewabic, St. Louis, R. J. Hackett and Forest City, and the tugs E. M. Peck, Metamora, I. U. Masters and others. During part of his time as a ship builder, Capt. Peck had for a partner the late I. U. Masters. He was also competent to sail a vessel, and during a period of two or three seasons he sailed the Fountain City. A number of the vessels which he built are still in commission, among them the Fountain City, which, up to a couple of years ago, was thought good enough for the passenger business in the Western Transit Line. Early in the '70s, Capt. Peck quit ship building and organized the Northwestern Transportation Co., which is still in existence, and which has been kept fully up to the times in the ownership of modern vessels. With the Hackett and her consort he inaugurated the lake system of tows, which made a big change in the ore-carrying business in the days of slow-going vessels of moderate capacity. Of late years, he has been interested largely with Mr. Harvey H. Brown of Cleveland in a fleet of steel and wooden vessels that are all of the best class.

It was the wish of Mrs. Peck that the steamer E. M. Peck, named for her husband and owned by him, should be used to carry his remains to Cleveland for burial. The ship was accordingly prepared for this purpose, and after the funeral services in Detroit on Monday evening a very impressive sight was witnessed at the river front building in which the captain's office has been located for a great number of years. Attended by a large gathering of sympathizing vessel owners, the casket was carried through the long building (which is made up of offices of shipping companies) and out over the river front pavilion and a temporary platform to the deck of the vessel. A resting place for the casket, secured against any danger from heavy weather, had been prepared in the forward part of the ship. The quarters of captain and other officers were given up to the mourners, and as the big ship sailed away with bow high in the air, on account of the absence of cargo of any kind, it was re-

marked that a like proceeding had never before been seen at a lake port. In Cleveland the ceremony was equally impressive. The representation of business men at the docks was of a most distinguished kind. The interment was at Lake View.

On the day following the death of Capt. Peck, a meeting of the Detroit vessel owners was called, Capt. Eber Ward acting as chairman. A committee, consisting of Jesse Farwell, W. A. Livingstone, David Whitney, Jr., Capt. Joseph Nicholson and Alex. McVittie, was appointed to draw up resolutions expressing the sense of the meeting. The following sentiment was adopted by them:

"It is with a distinct sense of more than ordinary personal loss that the vessel owners of Detroit meet to take action upon the death of Capt. Elihu Monroe Peck. Capt. Peck's life-long connection as a builder and manager left an impress upon the lake marine equalled by few of its

veterans. His far-sighted appreciation of its future development made him one of its most progressive members. His adoption of many new ideas, both as a builder and manager, did much to mould the character of the business, and some of the most important changes in lake navigation were due to his creation. The ships he built were ever exponents of the best skill and most thorough workmanship and were representative of that strict integrity and abhorrence of all sham which he so prominently exemplified. But it is as a personal friend and neighbor that the members of this meeting feel their loss. For years Capt. Peck has presided at the meetings of Detroit vessel owners. His sturdy and positive character, combined with many generous and kindly traits, had especially endeared him to his associates and we realize that resolutions are inadequate to convey our feelings. We commend the bereaved to Him who doeth all things well and who only can console. We request that the flags of our vessels be flown at half mast until after the funeral; also that a committee of eight be appointed to attend the funeral at Cleveland as an escort. In addition to entering this expression on the record, we do also direct that a copy be sent Mrs. Peck."

These resolutions are signed by Eber Ward, president, and W. A. Livingstone, secretary. The Detroit

committee that acted as escort consisted of Wm. Livingstone, A. A. Parker, Capt. James Millen, Thomas Adams, L. C. Waldo, Capt. Joseph Nicholson and J. W. Westcott. These gentlemen with Mr. Harvey H. Brown of Cleveland were the pallbearers. Resolutions conveying sentiment similar to the above were also adopted by executive officers of the Lake Carriers' Association in Cleveland.

As it was necessary to make arrangements, as soon as possible after the death of Capt. Peck, for the management of vessel interests that were in his charge, the directors of the Northwestern Transportation Co. met in Cleveland on the day following the funeral and elected the following officers: Harvey H. Brown, of Cleveland, president; George E. Hartnell, of Cleveland, vice-president, and L. C. Waldo, of Detroit, secretary, treasurer and managing owner.

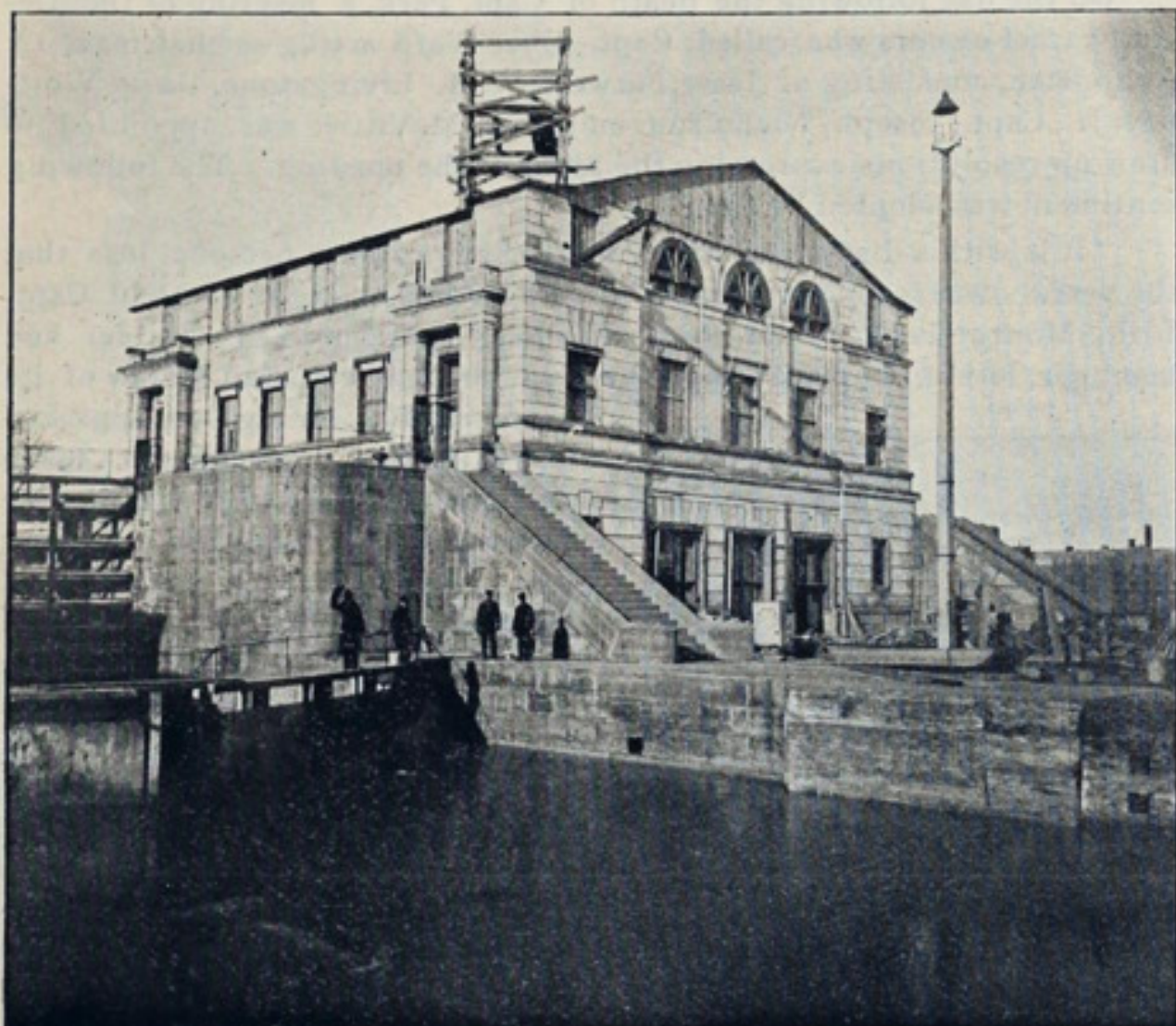
Although the gas buoys promised by the light-house board last fall for Poverty passage and Lansing shoal, Lake Michigan, are not as yet forthcoming, it is understood that a buoy of this kind will soon be placed at the station now occupied by the outer can buoy, entrance to Maumee bay, Lake Erie. This will facilitate the passage of vessels in and out of Toledo.



THE LATE E. M. PECK.

Plans for Opening the New Sault Canal Lock.

If certain plans for hurrying work on the new lock at St. Mary's Falls canal are approved by the secretary of war, the big lock will be in operation some time in July. The question is now under consideration in the department, and officials of the Lake Carriers' Association are trying to induce the secretary to give his consent to additional expenditures that will be necessary in expediting the work. Col. Lydecker of Detroit, who is temporarily in charge of the works that were under the direction of the late Gen. Põe, has prepared a special report regarding the necessity and advisability of hurrying the completion of the lock, and a decision in the matter will be reached shortly. It is understood that the ex ra ex-



POWER HOUSE FOR NEW AMERICAN LOCK, SAULT STE. MARIE, MICH.

pense necessary to the locking of vessels in July will probably not be more than \$15,000. The loss from delays that occurred in a single day before the Canadian lock was opened this spring are greater than the amount required to put the new lock in shape for work in July. During the first six or eight days of the present month, as many as eighty vessels were at times held up at the canal, and in a great number of cases they were delayed twenty-four hours and more.

Some views of the canal work are presented herewith. The operating machinery of the new lock is all in place, ready to be connected for a test, which will be made shortly. Considerable work is yet to be done on the approaches, but the contractor says that by putting on night forces, and by extra payments for hurrying operations, the approaches can be completed in July. As indicated by the engraving of the power house on this page, there is a great deal of work to be done on that structure, but its completion is not necessary in connection with the operation of the lock. There has been some speculation in the matter of having a narrow cut, about 200 feet wide, at the Encampment completed by midsummer, so as to permit of greater draft for vessels using the new lock in event of its opening in midsummer, but the main object in the opening of the big lock would be to do away with further delays at the canal. Not much can be expected in the way of increased draft from Lake Superior until all parts of the 20-foot channel are completed upon the opening of navigation next spring.

Tips from the Man on the Dock.

The man on the dock was inclined to be retrospective when he was congratulated upon having returned to his old grounds and reminded that this year was likely to witness some great changes in lake business. "Yes," he said, "there will, no doubt, be some great changes. We have been getting them regularly every year for some time now, and some improvements with them. But not all the 'improvements' are new by any means. I do not begrudge anyone any credit that belongs to them, but it seems to me there are some who are in a tremendous hurry to appropriate a good deal that does not belong to them. I remember when composite building was being made a stir about a few years ago and heralded as a new thing. There were composite steamers on the lower St. Lawrence when I was a boy, forty years ago, and there are lots of them there yet. I guess the old Cantin yard at Montreal has had as much or more to do with composite building than any other. Another 'invention' of the same nature was the sheathing of metal bottoms. I remember seeing a metal steamer docked at Montreal twenty-five years ago that had been

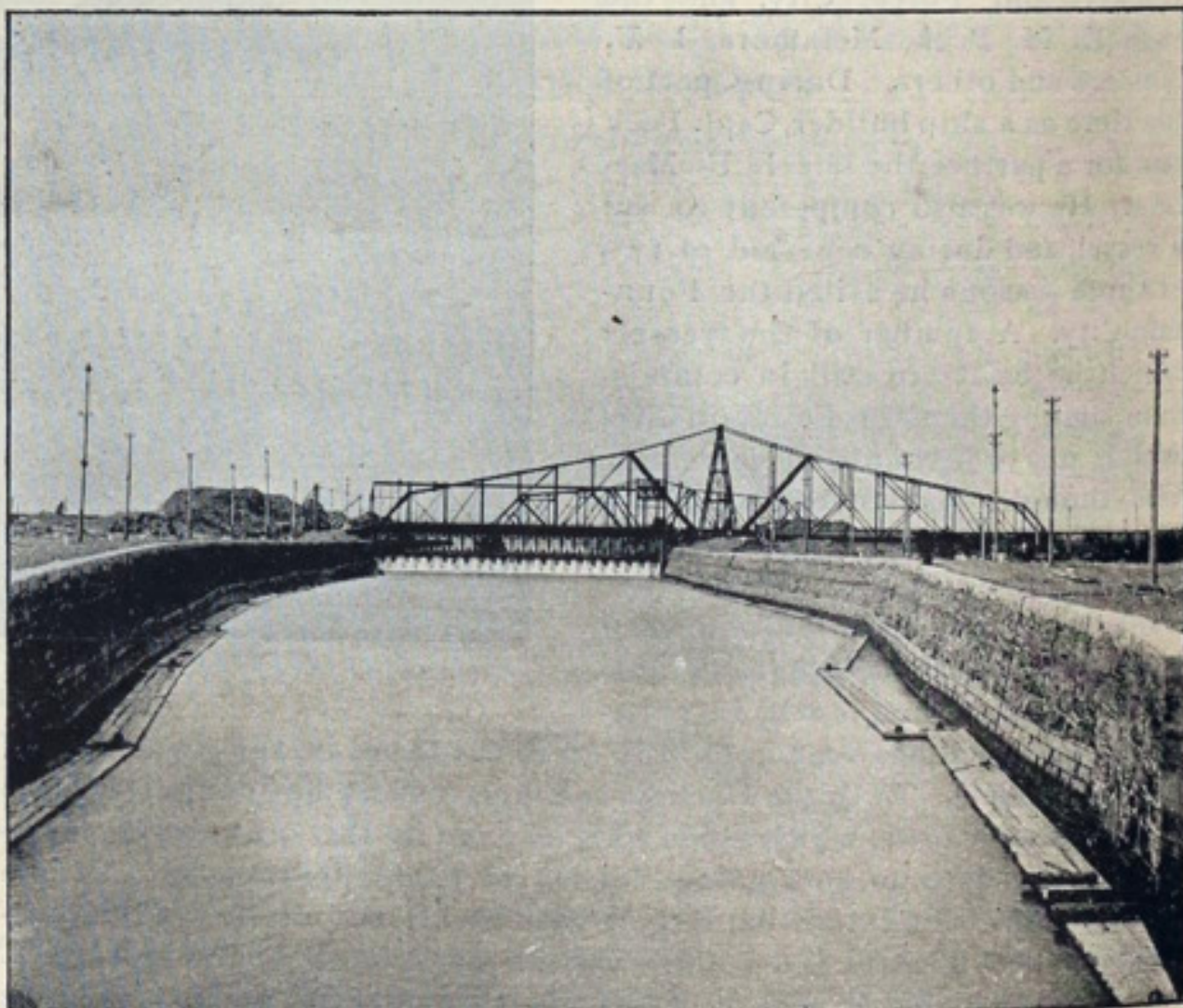
sheathed with rock elm. She was a collier trading between Nova Scotia and Montreal. The steamer *Campana*, she of the remarkable bilge construction, was sheathed in '81. She was one of the first metal boats to trade to Lake Superior and it was considered very risky indeed to navigate the "Soo" with an iron boat.

"I well remember when feathering paddles were looked upon here as an innovation. I do not suppose many now living remember when they were actually invented, but they have been in use since previous to 1850. I know of at least two boats on the lakes that have carried them for over thirty years.

"In the matter of boilers it is funny how often the same features bob up brand new. I was the other day looking over an old and rare work published in 1851, entitled 'Marine Boilers,' by B. H. Bartol. We are all familiar with the history of the so-called 'Scotch' boiler on the lakes, they first making their appearance here about 1880. But Mr. Bartol speaks of several steamers equipped with them previous to 1850 and gives drawings of the boilers. For instance, steamship *Hermann*, Atlantic liner, had four boilers, 16 feet diameter and 14 feet long, with three 48-inch furnaces in each. The only difference between these and the boiler of today was the fact that the uptake was constructed within the boiler proper instead of external as is usual now. So that even as regards size they were right up to date. We have only recently reached these sizes, though of course our pressures are considerably higher. These boilers were built by Mott & Ayres, New York.

"The water-leg dry bottom boiler was also in evidence. I note boilers built by Reanie, Neafie & Co., Philadelphia, substantially the same as some of our very latest 'patented' forms of construction, as to the fire-box. Another form of boiler which was 'introduced' within a few years has been called the gunboat, (probably because gunboats seldom use them), and Mr. Bartol also instances some of these. One steamer, the *Philadelphia*, between New York and South America, had a pair of such boilers of 13 feet diameter and 27 feet length, with four 40-inch furnaces in each. They were built by Merrick & Towne, Philadelphia. Forced draft, induced draft and high rates of combustion all had their innings nearly a half century ago.

"The Massachusetts, U. S. N., had two boilers of the common fire-box type worked with induced draft. The author says: 'The draft was produced (induced?) by an exhausting fan in the chimney.' The rate of combustion is given as 20 pounds of anthracite coal per hour per square foot of grate. This is equal to burning 30 pounds of bituminous coal per square foot in the same time. The Hudson river steamer *North America* had two firebox boilers with 84 square feet of grate; draft produced by fan blast under the grates; consumption of anthracite coal per hour per



VIEW OF CANADIAN CANAL, SAULT STE. MARIE, ONT.

Canadian Pacific Ry. bridge and movable dam. Weight of dam, 180,000 pounds. To be used in case of accident to lock gates. Dimensions, 372 feet long by 22 feet wide; works by hand.

square foot of grate, 47 $\frac{1}{2}$ pounds. Steamer *South America* had two fire-box boilers; 100 square feet of grate, forced draft, anthracite coal, 60 pounds per square foot. Several others are noted, all worked with forced draft—not on anybody's 'system' in particular—and the rate of combustion varied from 35 pounds to 70 pounds of anthracite per square foot of grate per hour. Among them are the *Oregon*, *Alida*, *Niagara*, *Joseph Belknap*, *New World*, *Traveller*, *Isaac Newton*, *Roger Williams*, *Armenia*, *Bay State*, *Empire State*, *Thos. Powell* and *Mountaineer*. The list includes

river, sound and sea-going steamers of various sizes and in every service, so that forced draft was evidently quite the thing fifty years ago, and they did not all burn anthracite coal either. The Hermann used bituminous coal and burned 22 pounds per square foot; the Falcon burned 2,240 pounds per hour on 101 square feet of grate; the Washington burned 3,920 pounds per hour on 182 square feet of grate. She was afterwards fitted with new boilers, worked with natural draft.

"Thus we see that the ancients had recourse to artificial draft, though they simply called it by its plain every-day name of fan blast, and achieved results in the way of high rates of combustion that have not yet been surpassed. In natural draft boilers, also, they were no slouches. The old Lake Erie steamer Empire State managed on 216 square feet of grate to burn 5,600 pounds of bituminous coal per hour, equal to 26 $\frac{3}{10}$ pounds per foot. Another Lake Erie steamer, the Mayflower, is credited with burning 6,160 pounds per hour on 151 square feet of grate, equal to 40 $\frac{8}{10}$ pounds per square foot. However, I am a little skeptical about this. The list might be extended, but these serve to show that a few things did occur to the minds of our ancestors, though of course they couldn't know as much as we do. A good many of the novel ideas sprung on us, and which are fads today, were tried and tested before the 'inventors' were born. The twin-screw, the bow rudder, the sectional propeller and numerous other novelties are older than their discoverers.

"So also with engines. The old Lake Erie steamer Buckeye State had a compound beam engine back in 1850. The first fore-and-aft com-

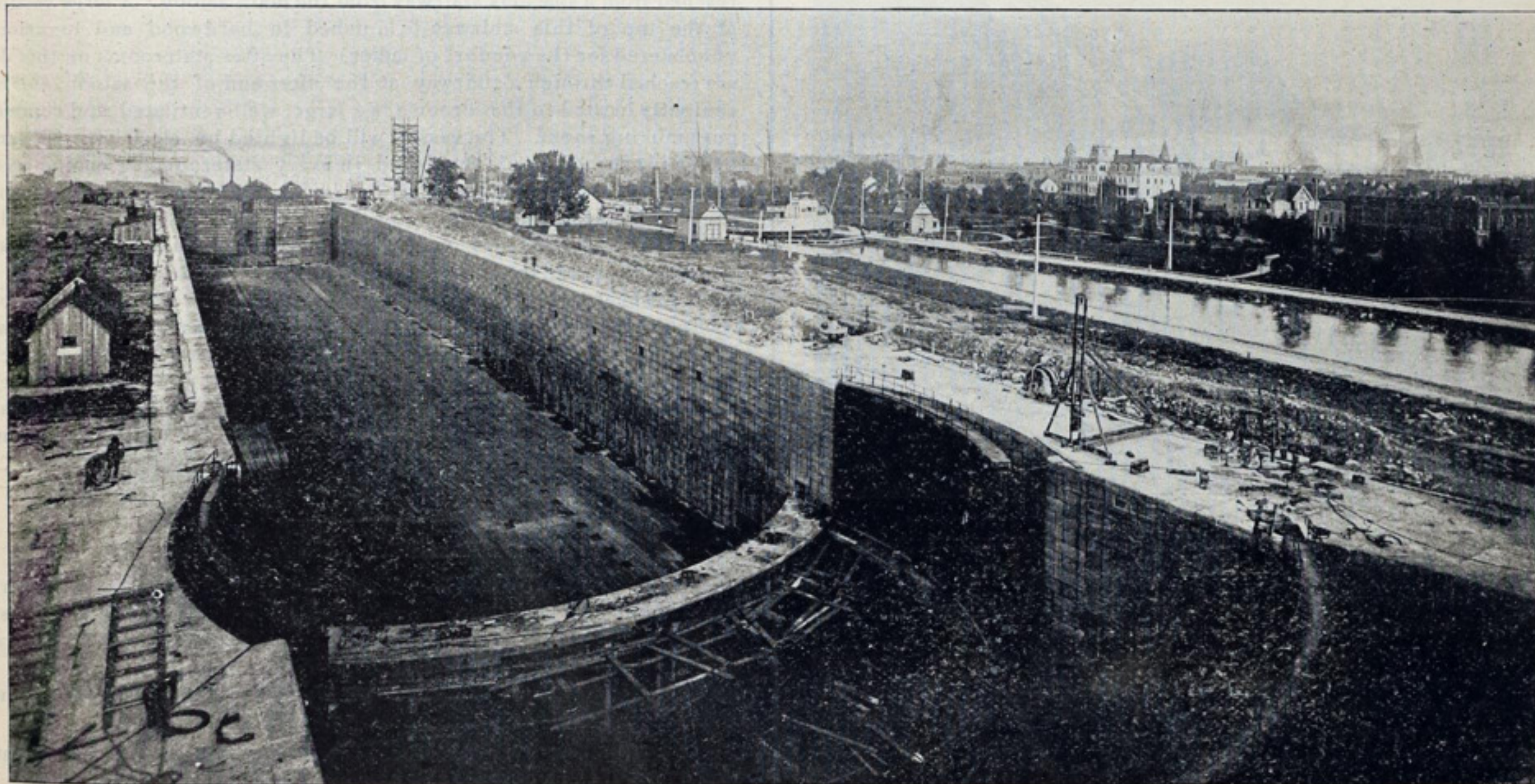
vious, Capt. Rice was president of this dry dock company. He was also for many years engaged in the marine insurance business with the late F. B. Fortier. His knowledge of the insurance business and his great ability in settling losses on vessel property are matters fully recognized by vessel owners in all parts of the lakes, as there are few who have not of late years had dealings with him in this regard. On Oct. 9, 1878, Capt. Rice married Miss Frances Mitchell, daughter of Judge William T. Mitchell of Port Huron, Mich., who with one daughter survives him.

In resolutions adopted by the Lake Carriers' Association Capt. Rice is spoken of as one of the efficient and deservedly prominent members of the organization; a man of sturdy, independent and positive judgment. He was always active and energetic in the organization in establishing and securing better conditions, better service, better men, and in all that made for the advancement of lake commerce.

Over 5,000 Net Tons.

As had been expected, the new Mutual line steamer Coralia has on her second trip carried more than 5,000 net tons of ore from Escanaba to Ashtabula, and her draft is less than 16 feet. Her second cargo aggregated 4,524 tons gross or 5,066 tons net. This is only 45 gross tons less than the big cargo of the S. S. Curry, taken from Escanaba to South Chicago, where there was practically no limit of draft on the Curry.

Iron ore—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland,



VIEW OF THE NEW 800-FOOT LOCK AT SAULT STE. MARIE, MICH.

pound built on the lakes is said to have been built in Detroit in 1880. As a matter of fact, there was one built in Chatham, Canada, in 1872 and placed in the steamer Tecumseh. There may have been others before this of which I have no knowledge, though of course they were common in sea-going steamers.

"What's that? No, thanks. I'm going over to see Jim Wallace's big fellow launched, so I won't have time to say anything more just now."

Life of Capt. John Rice.

Capt. John Rice of Buffalo, whose portrait was printed in the last issue of the REVIEW in connection with a short notice of his death, was sixty-two years of age. He was born at Hunter's point, Lake Ontario, on Jan. 6, 1834. He was only thirteen years of age when he began sailing out of Buffalo. At nineteen he was mate of a vessel, and in the same year became master of a lake boat, the brig Clarion. A few years later he entered the employ of the New York Central Railroad Co., sailing the passenger steamer Rocket and other vessels of the old People's line, plying between Buffalo and Chicago and Green Bay. He continued to sail these steamers until 1862, when, at the solicitation of the late Dean Richmond, president of the company, he accepted the position of fleet superintendent for the same line, with headquarters in Buffalo. At about the same time, he formed a partnership with the late Robert Mills and Patrick Walsh in the dry dock and ship building business at Ganson street and Buffalo creek. Later the firm was incorporated as the Robert Mills Dry Dock Co. At the time of his death and for a number of years pre-

vious, Capt. Rice was president of this dry dock company. He was also for many years engaged in the marine insurance business with the late F. B. Fortier. His knowledge of the insurance business and his great ability in settling losses on vessel property are matters fully recognized by vessel owners in all parts of the lakes, as there are few who have not of late years had dealings with him in this regard. On Oct. 9, 1878, Capt. Rice married Miss Frances Mitchell, daughter of Judge William T. Mitchell of Port Huron, Mich., who with one daughter survives him.

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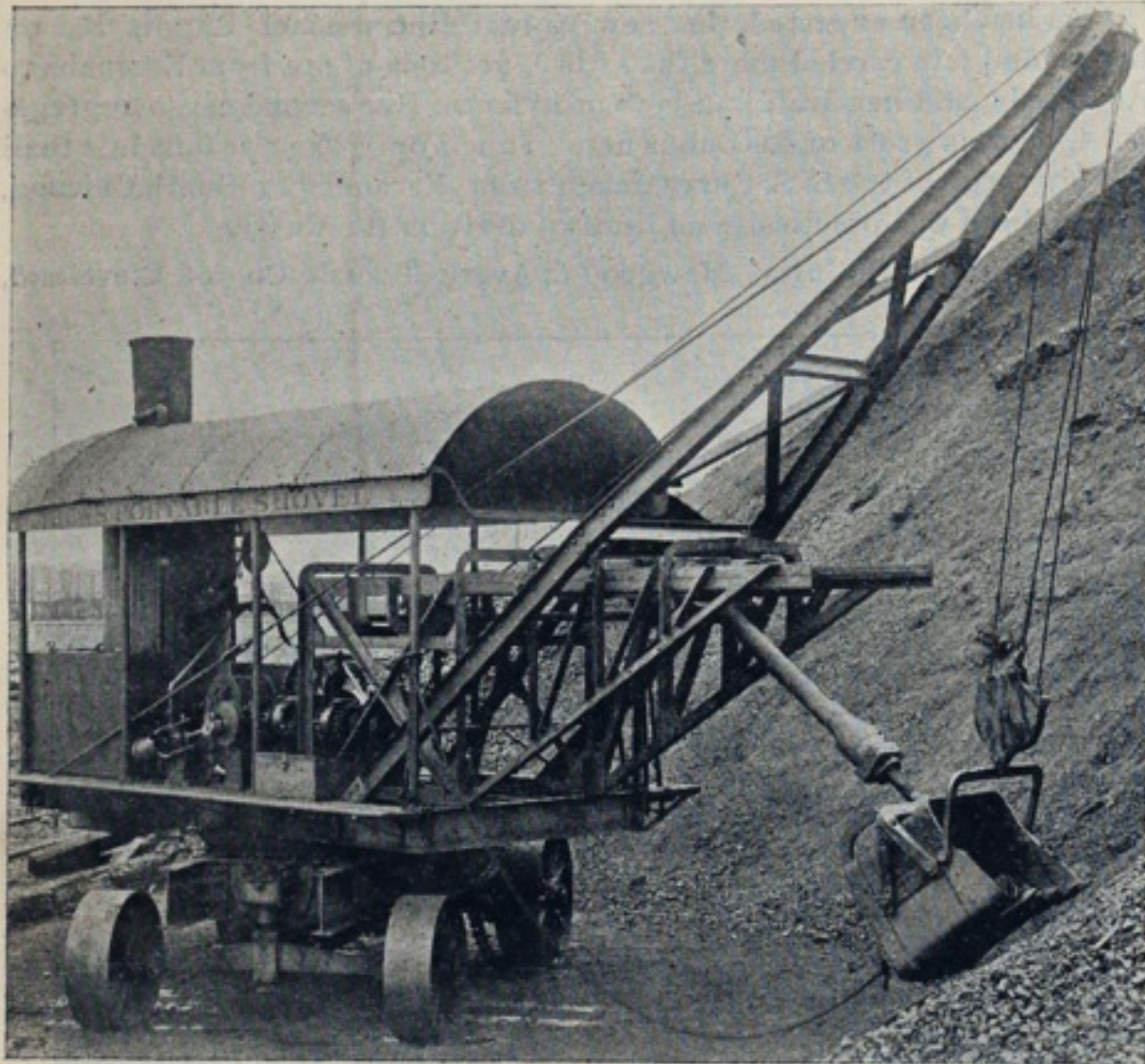
Iron ore—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland,

The actual price at which the five steamers of the Crescent line were sold to the Union Transit Co. was \$230,000. It is understood that Mr. French does not pay anything on the purchase price this season or next, except what he would have had to pay anyway on the charter, viz., \$27,500 each year, and that after the charter would naturally expire he has to pay \$4,000 per month during the season of navigation, with accumulated interest, until the debt is wiped out.

Ore Trimming Machine.

For a long time past Mr. W. P. Thew of Cleveland has been engaged in trying to perfect a machine for trimming ore. He now has on exhibition at the Variety Iron Works, Cleveland, a machine that is entirely different to one which he built some time ago. It has been examined by a large number of vessel owners, and such practical men as Capt. Geo. P. McKay, Capt. Wm. Mack and Walter Miller, late constructing engineer for the Globe Iron Works Co., say that they look for success with it. Mr. Thew has had the machine at work on a pile of thirty tons or more of Chandler ore at the Variety works, and everybody in the vessel business who has seen it has been greatly impressed with its operations. Unlike the first machine which he built, this one is intended for trimming only and not for loading ore into buckets at the receiving dock.

The machine consists mainly of a revolving truck with shovel or scraper attachment that can be worked at any point within a circle that



THEW'S PORTABLE SHOVEL.—DESIGNED FOR LOADING ORE INTO CARS.

will have a radius equal to half the width of a ship. Two of these trucks are to be attached to railways on the under side of decks, above the ore, and at both sides of the hatches, and in addition to their rotary motion, they will run back and forth for the entire length of the ship. It is figured that the two machines with electric motors and other attachments will not weigh, at an outside, more than twenty tons, and that they can be constructed and placed aboard vessels, complete, at a price that will admit of their paying for themselves inside of two seasons. Probably the entire cost of a plant for a 4,000-ton ship will not be more than \$5,000. The machine can be operated by an intelligent oiler, wheelsman or other employe aboard a vessel. The shovel or scraper that is forced into the ore and then drawn in different directions, mainly from the center of hatches toward the bilges, is 4 feet long and 30 inches high and can be made to draw from a pile under a hatch a big load of ore in one pull. It is expected that one machine will level a hatch pile in 15 to 20 minutes. One of the great advantages of an ore trimming machine of any kind is the time saved in departing immediately after cargo has been taken on, leaving the trimming to be done in open lake when weather will permit. It is more than probable that the owners of this apparatus will be enabled to apply it very soon to a ship in which it will be given an actual working trial. The success thus far attained warrants this assertion. If a trial of the machine is deferred during the present season, on account of the delay that would be incurred by a vessel putting it in, provision will certainly be made during the winter for a trial of it next spring.

The engraving presented herewith has no reference to the trimming machine. It is a shovel of Mr. Thew's design which has been at work for some time past loading ore into cars at Randall, O., where the Nypano railway has ore storage docks. The cost of loading ore from dock to cars with this shovel is said to be only 2 cents a ton.

There is little fear now of the river and harbor bill becoming a law. As it passed the senate on Wednesday, this bill makes direct appropriations of \$12,200,000 and authorizes continuing contracts of \$64,000,000, an aggregate of about \$76,000,000. Including continuous contract items, this is the largest river and harbor bill in the history of the government.

New Goodrich Line Steamer.

The new wooden screw steamer Iowa, built for the Goodrich Transportation Co. of Chicago by Burger & Burger of Manitowoc, was launched on Monday. She was designed by the Goodrich company at their office in Chicago for winter as well as summer service on Lake Michigan, and is 203 feet length on keel and 218 feet over all; beam over guards, 36.2 feet, and over hull, 31.2 feet; 14 feet molded depth. She is built of the best Wisconsin oak and has a truss built on the sides of the hull extending to the under side of the cabin deck. This truss is formed by a top chord of two steel channel bars, filled in with 9-inch oak strongly scarphed. Steel diagonal plate strapping, 6 inches by ½ inch and spaced about 5 feet apart in the square, extends over three-fourths of the vessel's length, being riveted at the top to steel channels and bolted to the framing at the under side of the bilges. The truss posts, 9 inches square and supporting the top chord, extend from below the beam knees, and are mortised into the top chord. Each truss post is connected at the top to heavy beams by strong deep knees. This form of truss is much stronger and neater than the old style of arch construction for vessels of this type. The stem and apron piece is over 3 feet thick, molded and covered with heavy steel plate for breaking ice, and the hull is sheathed with No. 12 sheet steel from below light water line to the underside of guards, for protection from ice. On the cabin deck are fifty-two staterooms for 108 passengers and on the hurricane deck there are twenty-four staterooms for forty-eight passengers. The rooms on the hurricane deck will be reached from a spacious stairway from the main saloon. A large vestibule at the top of this stairway is finished in hardwood and luxuriously upholstered for the comfort of ladies. The after staterooms on this deck are reached through a stairway at the after end of the saloon, and conveniently located to these rooms is a large, well-ventilated and commodious smoking room. The vessel will be lighted by electricity, 365 lamps being used. A light is furnished in every stateroom. Sleeping accommodations are ample and no pull-out berths will be used, as they hamper the seating accommodation of deck passengers. The painting and interior decorating is being done by Messrs. Crossman & Sturdy, Chicago. The vessel is furnished with frame side-lights, or air ports, made by the Detroit Sheet Metal & Brass Works. Engines are compound, of about 950 indicated horse power, and were built by Chas. F. Elmes, Chicago. Two boilers of the Scotch type are 10 feet diameter by 10 feet 6 inches long and are allowed 150 pounds pressure. The tubes are 2¾ inches diameter. Boilers were made by John Mohr & Sons, Chicago. The cabin work is by the Manitowoc Building Supply Co. Officers of the new vessel are Capt. John Raleigh, Engineer Julius Bushmen, Purser C. B. Hamilton and Steward John A. Williams.

Changes in Lights, Fog Signals, Etc.

About May 15 a light of the fourth order, showing fixed white, varied by a white flash every twenty seconds, will be established on the extreme northwesterly end of Round island, Straits of Mackinac. The light will illuminate 315 degrees of the horizon lying between N. N. W. ½ W. through westward and northward to W. N. W. ½ W.; bearings from a vessel.

Cedar point range has been changed so as to cover the deepest water in the part of the entrance to Sandusky that is marked by the range.

The heavy interest of the Carnegie company in the Shenango railway and the port of Conneaut will be an important factor in building up that port. The Carnegie influence there will not be felt, however, until next year, when the railway will be completed to Pittsburg. This month the new Carnegie furnace at Duquesne, the largest in the world, will be started. Its cost is nearly half a million dollars and the production will reach 1,000 tons daily. Another furnace of the same size for the same company will be completed about Oct. 1.

The removal of shoal spots at Ballard's reef and below the Lime-Kilns cut, Detroit river, is progressing rapidly, and it is quite certain that before Sept. 1 there will be narrow channels at these points affording nearly 18 feet of water. All other points from Lakes Huron and Michigan to Lake Erie are already clear. This means that before the present season is at an end the steamer Coralia, whose owners have been hurrying work on deep channels at Ashtabula, will carry full 6,000 net tons from Escanaba.

The bill authorizing the establishment of a life saving station on the light-house reservation belonging to the United States at Port Huron has passed the house of representatives and will very probably become a law at this session of congress, but as with light-houses and other aids to navigation, an appropriation for the life-saving station must be secured after it is authorized. A year or two may elapse before the money is attained and the station built.

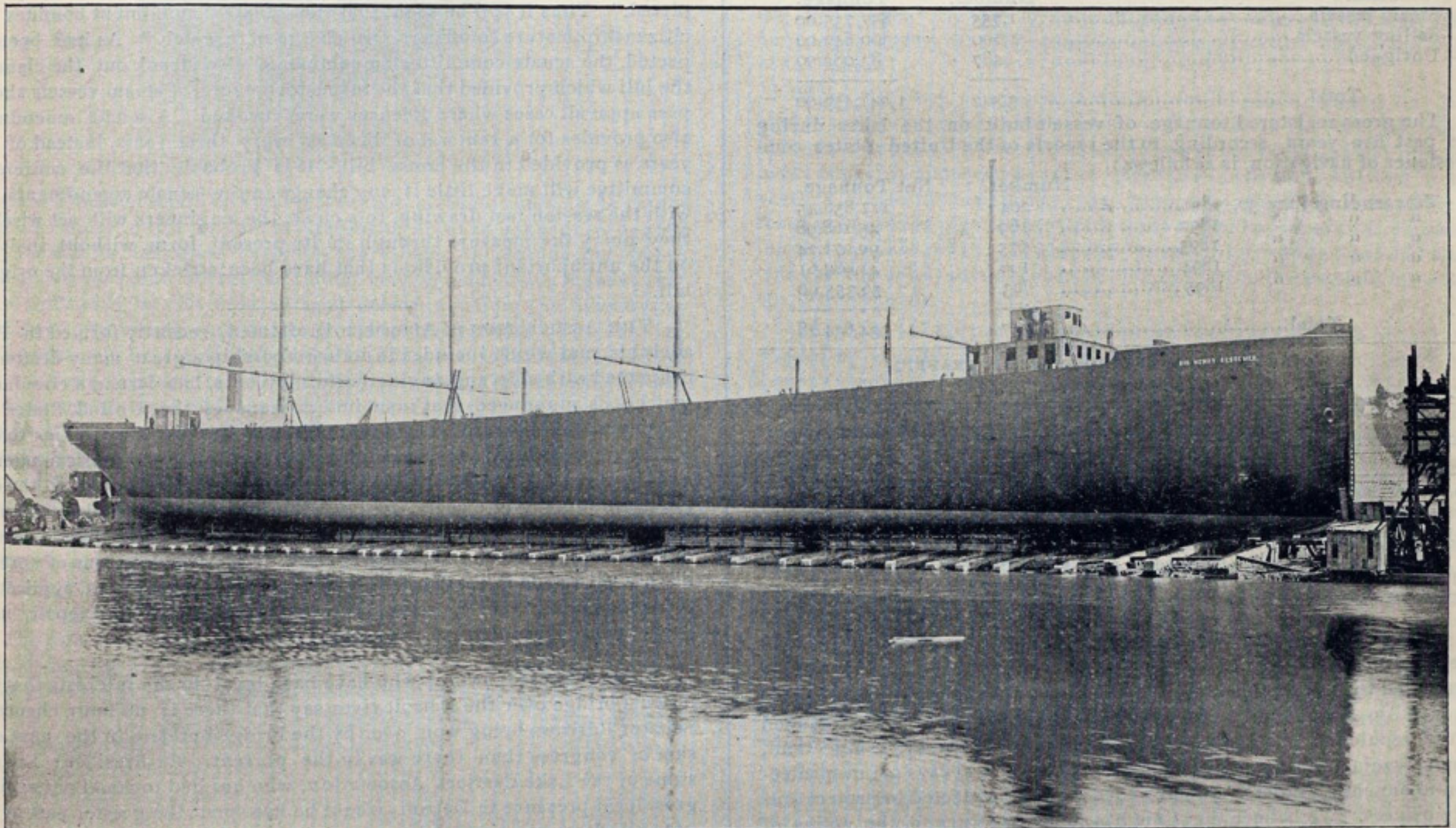
Capt. Davidson's schooner Armenia took 92,000 bushels of wheat as her first cargo from Duluth. She drew only 13 feet 10 inches.

Ship Yard Matters.

Three big ships were launched on Saturday last, two of them in Cleveland and one, a whaleback tow barge, at West Superior. The Globe Iron Works Co., Cleveland, launched the Sir Henry Bessemer, first of the Rockefeller ships. This steamer was described at length in the REVIEW of April 30, and a cross sectional drawing giving weights, sizes of material, etc., was also printed at that time. A view of the Bessemer on the stocks just before launching is presented on this page. A cross sectional drawing of the whaleback barge launched at West Superior has also been published. It will be found, with a description of the vessel in our issue of May 7. This barge is 20 feet shorter than the steamer that will tow her, the Frank Rockefeller, but is expected to carry probably 100 tons more cargo than the Rockefeller. This shortage in the steamer's cargo is due, of course, to the space given up in the hull to boilers, engines, etc. The third vessel launched Saturday was the steamer building at the yard of the Cleveland Ship Building Co. for the Zenith Transit Co. of Duluth, of which A. B. Wolvin is president and general manager. Her length from forward side of stem to after side of stern post is 400 feet, beam 48 feet and depth at shallowest point amidships, 28 feet, with about 6 feet sheer forward and 4 feet sheer aft. Scantlings are entirely of channel section. All plates are lap jointed. The water bottom is 5 feet

steamer City of Buffalo, all say that they are confident of the ship making 20 to 21 miles in regular service whenever such a speed is required of her. They add that the only cause for delay in delivering the boat to her owners was the desire of Mr. Kirby to have all details attended to before the ship left his hands. Messrs. Fletcher and Taylor of the W. & A. Fletcher Co., New York, builders of the engines, as well as Lewis Nixon, distinguished naval architect, attended preliminary trials of the steamer. Mr. Nixon, who had been invited to look over the boat, was very earnest in his praises of her. The City of Buffalo will arrive in Cleveland this (Thursday) evening and depart for Buffalo after a stay of a few hours. The excursions of business men previously planned will take place in Buffalo Friday and in Cleveland on Saturday.

Thus far this season, repairs on steel boats due to stranding have not been very heavy. Bills on the steel steamers Samuel Mather and Simon Murphy, which left the two Cleveland docks a few days ago, were not as large as might have been expected. No new material was required on either of them. Plates were removed and frames pulled down in the manner now generally followed in these repairs. The Murphy's bill amounted to about \$2,000, while that of the Samuel Mather was \$4,000 to \$4,500. The Cleveland Dry Dock Co. now has another extensive job in repairs to the wooden steamer Geo. W. Morley, which was damaged in



LAKE FREIGHT STEAMER SIR HENRY BESSEMER, 432 FEET OVER ALL.

First of the Rockefeller ships on the stocks at the Globe Yard, Cleveland, just before launching.

deep and will hold about 2,500 tons of water. It is divided into eight compartments and the ship is supplied with two very large duplex pumps for emptying it. There is no wooden ceiling on the tank top, it being entirely flush-plated with very heavy steel. Twelve cargo hatches are spaced 24 feet centers. The entire deck of this ship aft of the pilot house and texas, which will be located well forward, will be free for handling cargo. Dining room and all other quarters aft will be between decks, so that there will be nothing but skylights on the spar deck aft. Alike to nearly all of the other 400-footers, this steamer will have steam windlass and capstan forward and steam capstan aft, as well as two steam capstans on the spar deck, which will be about equal distance from bow and stern; also one of the builders' double hoisting engines on the spar deck and a steam steerer in the engine room. Electricity for lighting purposes will be generated by two compound direct connected sets of engines and dynamos. The propelling engines are triple expansion with cylinders of 21, 38 and 63 inches diameter by 40 inches stroke, turning a propeller of 13½ feet diameter. Two Babcock & Wilcox water tube boilers will furnish steam at 225 pounds pressure. The Queen City will be ready for service about June 15 and will be sailed by Capt. Ralph J. Lyons with J. H. Hayes as chief engineer.

Messrs. Kirby, McMillan, Calder and other officials of the Detroit Dry Dock Co., who have had to do with the trials of the new paddle

the St. Lawrence while on a trip to Prescott with grain. Her repairs will probably amount to \$5,000.

Another big ore carrier, the steamer E. W. Oglebay, named for the senior member of the firm of Oglebay, Norton & Co., Cleveland, will be launched at F. W. Wheeler & Co's yard, West Bay City, on Saturday. This ship is not so large as the Coralia or the steamers of the Rockefeller fleet, but she is modern in all respects and is suited to carrying more than 4,000 gross tons on the deep draft that is expected next season.

James Davidson's wooden schooner Abyssinia, the second of his new boats for this season, is 2,037.66 tons gross and 1,916.68 net. Her official number is 107,221. The tonnage of the new paddle steamer City of Buffalo is 2,398.27 gross and 1,262.83 tons net, and her official number is 127,132.

Pursuant to authority given him by the treasury department, the collector of customs at Duluth has appointed Mr. W. S. Brann deputy collector of customs for day service at the Mesabi docks in Duluth, and Mr. T. D. Murthy deputy collector for night service on the same dock. Hereafter there will be no delay or annoyance in getting clearances at this dock.

The Babcock & Wilcox company in England recently received orders for six boilers of their marine water-tube type from owners who have already had experience with the boiler in actual work aboard their ships.



DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, O by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,755	857,735.00
Sailing vessels.....	1,100	300,642.00
Unrigged.....	487	83,082.00
Total.....	3,342	1,241,459.00

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
Year ending June 30, 1891.....	204	111,856.45
" " " 1892.....	169	45,168.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,353.00
Total.....	747	334,634.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895.*	1894.	1893.	1895.	1894.	1893.
No. vessel pass'ges	17,956	14,491	12,008	3,434	3,352	3,341
T'n'ge, net registd	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of Navigat'n	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about 1/2 per cent. of the whole, but largely in American vessels.

IT IS QUITE evident now that the national conventions of the two great political parties to be held in St. Louis and Chicago shortly will be compelled to give attention to the question of discriminating duties in favor of American ships. The following plank has already been included in the republican state platforms of Oregon, New Jersey, Connecticut, Pennsylvania, Alabama and Michigan: "We have always given protection to our ship builders. In late years we have neglected to protect our ship owners. We believe the time has come to return to the policy of Washington and Hamilton, which by discriminating duties in favor of American bottoms, secured 90 per cent. of our carrying trade to American ships, and which, if now restored, would again revive our shipping and cause American freights to be paid to Americans." This plank was prepared under the direction of the American Merchant Marine Association. The idea is to get as many people as possible in favor of it, until sentiment throughout the country will demand a shipping measure from congress. In the Michigan republican convention last week the committee on resolution attempted to restrict the platform to four points, and consequently there was danger of the shipping resolution being turned down, but through the efforts of Wm. Livingstone, ex-president of the Lake Carriers' Association, the plank referred to was adopted. The promoters of the plank in republican conventions advance these reasons for its adoption: "It is sound republican protective doctrine. It puts money into the national treasury, instead of taking money out, as bounties and subsidies do. It creates preference for American ships in the carrying of American commerce. It was in force for nearly forty years—from the beginning of our government down to 1828, during all of which time an average of 90 per cent. of American foreign commerce was carried in American ships. The first act of the first congress in 1789 provided in part for this form of ship protection. Subsequent acts of that and succeeding congresses strengthened and extended the policy. Ship protection was abandoned, because it was no longer thought necessary, and from that time the proportion of carriage of American commerce in American ships has declined, until today but 11 1/10 per cent. of American commerce is carried foreign in American ships. The weakness of the

United States is only apparent upon the seas of the world. The adoption of this policy would strengthen the nation where its one weakness at present exists. It is a policy that provides for the same protection for American ships that is now provided for American manufacturers, namely, discrimination against foreign ships, just as we discriminate against foreign manufacturers, by a higher duty upon the foreign articles, be they ships or products of foreign nations. The United States navy is weak, because Americans are not to be had to man our war ships. The adoption of this policy would provide a resource for the manning of the navy, sufficient to provide the men for the nation's protection, if ever assailed by a foreign power."

THE BILL in which the marine engineers of the country have been so much interested during the present session of congress is now being considered by conference committees of both houses. As it passed the Senate, it provides that "all the officers of vessels of the United States who shall have charge of a watch, including pilots, shall in all cases be citizens of the United States. The word 'officers' shall include the chief engineer and each assistant engineer in charge of a watch on vessels propelled wholly or in part by steam; and after the 1st day of January, 1897, no person shall be qualified to hold a license as a commander or watch officer of a merchant vessel of the United States who is not a native-born citizen or whose naturalization as a citizen shall not have been fully completed." Thus it will be seen that the senate amendment confines the citizenship feature to officers "in charge of a watch." As had been expected, the senate committee on commerce also struck out the clause in the bill which provided that the inspector-general of steam vessels should pass upon all cases where licenses were revoked. A senate amendment also provides for a renewal of licenses every three years, instead of five years as provided in the house bill. It is probable that the conference committee will make little if any change in the senate amendments, and with the session fast drawing to a close, the engineers will act wisely if they hurry the measure through in its present form, without insisting on the unimportant provisions that have been stricken from the original bill.

THE ASSOCIATION of American Draftsmen, recently formed in Philadelphia, and which includes in its membership a great many draftsmen connected with ship and engine building plants, has issued a circular, in which it is announced that none but citizens of the United States are eligible to membership. One great object of the organization is "to discourage the employment of foreign to the detriment of American talent." This feature of the association's aims was probably prompted by the employment, during late years, of a great number of foreign draftsmen in ship building institutions. The wisdom of such a policy in an association of this kind is, of course, questionable. American citizens of foreign birth must reside in the United States ten years previous to application for membership. W. T. Jones, bureau of construction and repair, navy department, is secretary of the society.

DETROIT vessel owners who have been loyal to the interests that opposed a bridge over the Detroit river say that there is no more chance of Senator Burrows being won over by the bridge builders in the next session of congress than there was in the present. Ex-President Livingstone of the Lake Carriers' Association, who has had to stand out against great local pressure in Detroit, where he has spent the greater part of his life and where his home interests, present and future, are located, says that he has no more doubt of Senator Burrows' position than he has of his own opinions in the matter. It is well known, of course, that the division of opinion between the two Michigan Senators, Messrs. McMillan and Burrows, was the greatest point in favor of the vessel owners on the bridge question.

IT IS QUITE generally understood that the Marine Journal of New York has had a great deal to do with the passage of a bill in the house of representatives, a few days ago, which so amends the laws of the United States as to prevent Americans from purchasing or chartering foreign-built yachts. This end is to be accomplished by imposing tonnage duties and port charges upon foreign-built yachts owned or used by Americans. The bill is said to have the approval of Mr. Frye of the senate committee on commerce and there is reason to expect its passage in the senate. The Journal is to be congratulated upon its efforts in behalf of this measure.

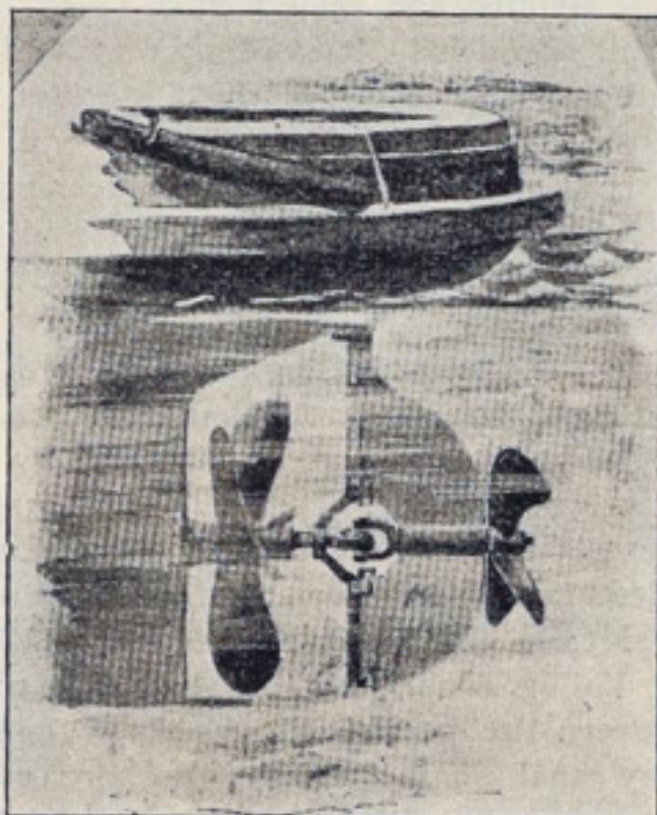
THE Port Orchard dry dock on Puget sound, which was tested recently by docking the coast defense vessel Monterey, is 650 feet 5 inches long, or 50 feet longer than the next largest naval dry dock in the United States, that at Port Royal. It is more than 100 feet longer than any of the other seven docks in this country, with but two of equal length of 650 naval dry docks of the world. It has a depth of 39 feet, width at top of 130 feet and at base 67 feet, and the mean draft at high water over sills is 30 feet.

Round trip excursion tickets between Cleveland Lorain may be secured via the Nickel Plate road at \$1.00.

79 July 31

Kunstadter Steering Screw.

An article on fire boats in Cassier's Magazine for May refers to the Kunstadter steering screw, which was fitted to one of the Cleveland fire boats, and which was first brought into prominence about twelve years ago. At that time the screw was tried with quite satisfactory results on a number of vessels, both in the United States and in Europe. Since then, however, comparatively little has been heard of the device, notwithstanding its admitted excellencies in some respects. A small sketch of the screw appears herewith. It will be noticed that the steering screw, or after screw, shaft is carried through the rudder and is connected with



the main propeller shaft by a universal joint, so that it may be turned with the rudder, either to port or starboard, up to an angle of 45 degrees and thus add its influence to that of the rudder in turning the vessel. One immediate result is that the rudder may be made much smaller than would ordinarily be the case without detracting from the maneuvering capacity of the vessel, and with the usual proportions of rudder and screw, relatively to size of hull, the steering screw would cause a vessel, so it has been claimed, to make a complete circle, for example, in half the diameter required with the rudder alone. Despite this maneuvering superiority, however, the Kunstadter apparatus does not seem to have gained much favor in the past dozen years, due probably to the fact that it may not lend itself satisfactorily to use on large vessels because of constructive difficulties, and because also on small craft its advantages are not so marked, comparatively speaking, nor of such great importance as to make it particularly worth having, except in special cases.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on May 9, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago.....	15,242,000	5,142,000
Duluth.....	9,736,000
Milwaukee.....	820,000	2,000
Detroit.....	205,000	22,000
Toledo.....	573,000	91,000
Buffalo.....	1,252,000	597,000
Total.....	27,828,000	5,764,000

As compared with a week ago, the above figures show at the several points named a decrease of 2,845,000 bushels of wheat and 1,166,000 bushels of corn.

Anent the suggestion of Mr. M. A. Bradley in the MARINE REVIEW of last week that the name of Capt. Alexander McDougall should be given to one of the Rockefeller ships, we learn that the Bessemer Steamship Co. recognizes the services of Capt. McDougall in connection with the progress of ship building, and if to honor American benefactors of ship building and the iron industry who are still living had been within the scope of their plans, the name of Capt. McDougall, with many other living men of distinction would not have been overlooked. Our informant adds that Capt. McDougall's connection with the Rockefeller interests would not have been a special reason for his selection, as further suggested by Mr. Bradley, since the selection of names was made on a wholly different principle.

Jay C. Morse of the Illinois Steel Co. and Wm. L. Brown of Pickands, Brown & Co., Chicago, returned a few days ago, from a European trip.

Low rate, short limit tickets between Cleveland and Lorain have been placed on sale via the Nickel Plate road at \$1.00 for the round trip. 77-7-31

One dollar round trip excursion tickets between Cleveland and Lorain are on sale by agents of the Nickel Plate road. 78 July 31

In General.

Provision is being made in congress for the printing of 10,000 copies of the report of the Nicaragua canal commission, together with all maps, plans, etc., accompanying same.

The active efforts of the Cramps of Philadelphia in behalf of the Yarrow water tube boiler are due to the fact that they have purchased the right to manufacture these boilers in the United States.

The contract for a steel tug 130 feet long for the Standard Oil Co., upon which lake builders were recently asked to submit bids, has been awarded to the Harlan & Hollingsworth Co., Wilmington, Del.

For over forty years the late Gen. Casey was connected with the engineer corps of the army, and it is estimated that the expenditures made under him, directly and as chief of engineers, amounted to considerably over \$100,000,000.

Ship building on the Clyde is more active than it has been in a number of years. During the month of April shipping to the extent of about 40,000 tons was launched, while new orders booked during the month footed up about 52,000 tons.

John Birkinbine, engineer and statistician of Philadelphia, has just paid another visit to the lakes. He was in Cleveland Monday. Mr. Birkinbine always speaks in an enthusiastic manner of the great future of the lake region. He says he finds surprise everywhere in the east when he gives accounts, in lectures and in other ways, of the enormous traffic of the lakes.

When the Fugi, a Japanese war ship, was launched recently in England the wife of the Japanese minister was chosen to perform the christening ceremony. At the appointed hour a silver knife was put into her hand, and with it she cut a cord of twisted red and white silk fast to the vessel. At the moment a cage that hung over the bows opened to let forth a number of pigeons, and with them a cloud of paper squares, showing the national colors. As they fell some sprinkled the bows and some clung to the sides, covering her, so to speak, with the emblem for which she is to do battle.

There is no part of the world which has such a black record for wrecks as the narrow Baltic seas. The number in some years has averaged more than one a day, the greatest number of wrecks recorded in one year being 425, and the smallest 154. About 50 per cent. of these vessels became total wrecks, all the crews being lost. In the four years 1877-81 no less than 700 lives were lost. It must be noted with regard to these wrecks, however, that many of the vessels navigating these seas are old and ill found, especially those engaged in the timber trade.

As it passed the senate, the navy appropriation bill contained an item directing the secretary of the navy to examine, through a board composed of line and staff officers, into the merits of any system presented for the propulsion of vessels by direct action against the water without the use of screws, in comparison with the steam engine and propeller, and into the relative efficiency of the two methods as to displacement, waste of fuel, liability to accidents, and speed endurance, and also into the applicability and special advantages of the direct system in connection with torpedo boats and coast defence vessels.

It is claimed now that in new orders for torpedo boat chasers the British admiralty will demand a speed 33 knots. This would be equal to 38 statute miles, or about the all-day speed of the best express trains. Such a speed will not be obtained with a horse power much under 8,000. This is one-fourth the trial trip horse power of the Lucania. The Lucania is of 13,000 tons displacement, while these craft will probably be of less than 300 tons displacement. So that the Cunard ship, which is forty-three times as big, takes only four times as much power to drive her at a speed better than 20 knots.

More Holland submarine torpedo boats will probably be built if the navy bill is not greatly changed in the conference of committees of both houses of congress. The bill as it passed the senate authorizes the secretary of the navy to contract for the building of two boats of the Holland type, at a cost not exceeding \$175,000 each, the boats to be constructed and delivered to the navy department within four months from the date of contract; provided, that the Holland boat now being built for the department shall be accepted as fulfilling all the requirements of the contract, and as being satisfactory to the secretary of the navy; but no action shall be taken therein until the Holland boat now being built shall be fully tested to the satisfaction of the secretary of the navy, and thereupon accepted.

Here is a splendid opportunity of visiting the west. The Nickel Plate road has authorized low excursion rates to Ottawa, Kansas, on May 17, 21 and 22 for the annual convention of the Dunkards, which convenes at Ottawa on May 26. Tickets may be extended thirty days from date of issue by depositing them with the joint agent at Ottawa. The uniform courtesy of employees, the best of roadbeds, and the splendid modern equipment of this line has made it the popular low rate line for all points west. 74-May 21

Canadian Canals.

ADMINISTRATION—ALL CANALS IN THE DOMINION.

Canada's canals are all under the direction of the department of railways and canals. There are no special regulations governing either the Sault Ste. Marie canal, at Sault Ste. Marie, Ont., or the Welland canal. Printed regulations regarding these, as well as all of the St. Lawrence canals, and others of less importance, are contained in a pamphlet issued by the department of railways and canals and which is entitled "Regulations for the Dominion Canals." Copies of this pamphlet may be obtained from the department at Ottawa.

The governor in council may impose and authorize the collection of tolls and dues upon any canal, and may, from time to time, in like manner, alter and change such dues or tolls, and may declare the exemptions therefrom; and all such dues and tolls shall be payable in advance and before the right to the use of the canal in respect of which they are incurred accrues, if so demanded by the collector thereof. Authority from the minister, to any person professing to act for him, shall not be called in question except by the minister, or by some person acting for him.

The goods on board of any steamboat, vessel or other craft, to whomsoever the same belong, shall be liable for any tolls, dues or penalties imposed, and they or any of them may be seized, detained and sold in the same manner as the steamboat, vessel or other craft in which they are, as if they belonged to the person violating any such regulation, saving the recourse of the real owner thereof against such person.

EXTRACTS FROM CANAL RULES AND REGULATIONS.

As the pamphlet referred to above is largely made up of special detail for the guidance of officers in charge of the dominion canals, and as the scope of authority given to these officers is so liberal as to insure entire control of the canals by them, it will be sufficient to note only the important rules and regulations.

Immediately upon or before entering any of the canals the master or person in charge of a vessel must obtain a clearance at the first or nearest collector's office, which clearance shall be exhibited at the first lock after departing from the collector's office, and the same shall be exhibited at any other lock whenever and as often as shall be required by any such officers.

Every vessel navigating any of the canals shall be correctly and distinctly marked and gauged in feet and inches at the bow, amidships and stern, showing the exact draft of water drawn by each portion of the vessel or boat, neither of which will be allowed to enter the Welland canal drawing more than 14 feet of water, the Murray canal 11 feet, the St. Lawrence and Ottawa canals 9 feet, the Chambly canal 6½ feet, the Trent valley canal 5 feet, the Rideau canal 4½ feet, the Sault Ste. Marie canal 17 feet, and the St. Peter's canal 17 feet, and in all cases possibly less, should circumstances so require.

No steam vessel using wood as fuel shall be permitted to pass any of the canals or into or out of the harbors which shall not have fixed at the top of each of her chimneys or smoke-pipes a wire screen through which the smoke from the fires of the said steam-vessel is to pass, with meshes or interstices not more than ¼ of an inch in width.

All vessels navigating any canal or harbor shall have their yards topped or braced up, so as not to extend athwart-ships further than the side of the vessel; they shall also have their booms, bowsprits, jib booms, cat-heads, and all outriggers, rigged in or topped up and their anchors secured, so as to avoid doing damage to any of the lockgates, piers, bridges or other works, or vessels.

No master or person in charge of any vessel shall cast anchor in any canal or harbor or in the channel leading thereto, nor fasten nor moor any such vessel, boat or raft whilst in the canal or harbor, or channel leading thereto, nor discharge any part of their cargo, or take in any lading without the express permission of the superintending engineer.

Any person or persons who shall throw into the harbor or canal, or any lock, feeder, basin or waste-weir connected therewith, or into the channel, or within 200 yards of the entrance thereof, any putrid substance of any kind, or stones, ballast, timbers, brush or other rubbish, or in any manner obstruct any canal or harbor, or channel thereto, shall be liable to fine.

Permission from the superintending engineer must be obtained for the passage of rafts. No raft or tow of timber passing through the Welland canal shall exceed 25 feet in width, or more than 500 feet in length between Lake Erie and Allanburgh or half that length between Allanburgh and Lake Ontario. On the Murray, Cornwall, Beauharnois, Lachine and Ottawa river canals, the dimensions must not exceed 28 feet by 500 feet; on the Williamsburgh canals 28 feet by 200 feet; on the Chambly canal 23 feet by 400 feet. In the contracted parts of the Trent valley canal, within limits to be defined by the superintending engineer, 30 feet by 600 feet, and on the Rideau canal 25 feet by 100 feet. Every raft or tow of timber of the full length hereinbefore mentioned, when passing through the canal, shall have at least three men in charge thereof.

As regards priority of passage through the canals or locks, there shall be only two recognized classes of vessels, namely, a first class, composed of steamers whose machinery is described in the certificate of the steamboat

inspector as suitable to be employed "in the carriage of passengers" in distinction to steamers whose machinery, etc., is described in such certificate as suitable to be employed "in the carriage of freight and passengers;" and a second class composed of all other vessels, of what kind soever they may be. Of these two classes of vessels, those of the first class shall have priority of passage over those of the second class; provided, that mail steamers navigating the canals or passing through any of the locks of Canada shall always have priority of passage over all other vessel, whatsoever. When several boats or vessels are lying by, or are waiting to enter any lock or canal, they shall lie in single tier, and at a distance of not less than 300 feet from such lock or entrance, except where local conditions may otherwise require, and each boat or vessel, for the purpose of passing through, shall advance in the order in which it may be lying in such tier, except, in the case of vessels of the first class, to which priority of passage is granted as above. Should, however, any first class vessels or which at a certain fixed hour, any lock is kept clear, not then enter such lock, vessels of the second class, which may be in waiting, shall immediately have the use of the lock, and continue so to use it until the delayed first class vessel arrives.

Every vessel using the canals shall be provided with at least two good lines or hawsers, and every vessel of more than 200 tons shall be provided with four good lines, and each line shall be attended by one of the boat's crew.

In all cases of vessels or boats meeting in the Ottawa and Richelieu canals, the vessels descending shall keep the towpath, the ascending vessels passing to the off-side; in the Sault Ste. Marie, Welland, Murray, St. Lawrence and Trent Valley canals, vessels shall pass under the rules and regulations which govern the passing of vessels in the lakes. When any vessel, navigating any canal, shall overtake another vessel which shall not be moving at the same rate of speed, the vessel so overtaken shall bring up and lie to on the off-side, at the first convenient place, in order to allow the faster vessel to pass by, unless within 300 yards of the wall of the lock towards which the vessels are progressing, in which case the faster vessel shall not attempt to pass.

No vessel or boat shall be permitted to pass through any canal at a greater speed than the superintending engineer may determine, which as a general rule, may be taken as four miles an hour.

Trade Notes.

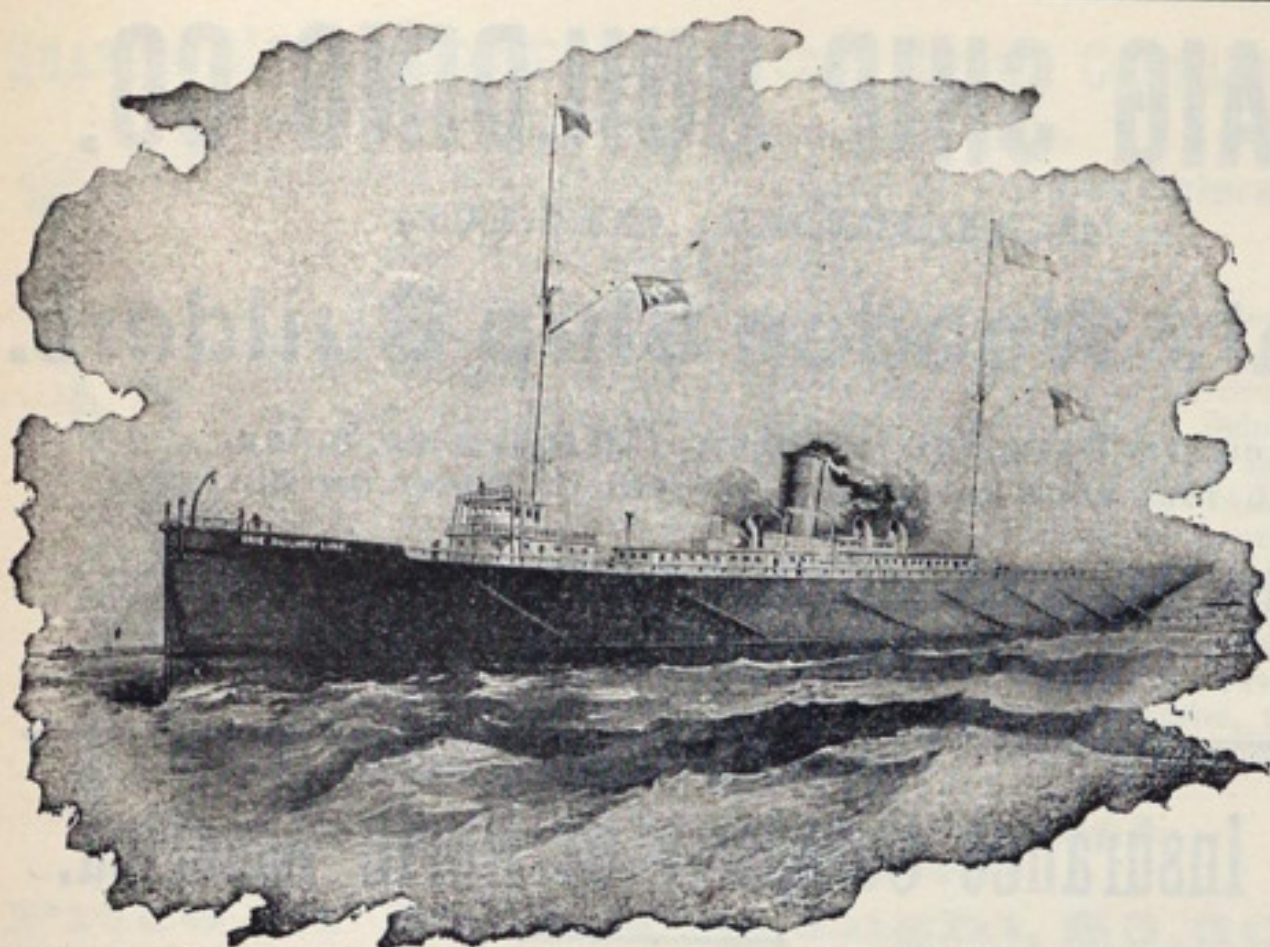
A copy of the 1896 pocket catalogue of the Lunkenheimer Co., Cincinnati, manufacturers of brass and iron valves, lubricators and steam specialties, is at hand. This company makes a feature of special work for engine and machinery builders and will furnish estimates upon receipt of specifications, blue prints, etc.

The 1896-97 catalogue of the Clarence E. VanAuken Co., Chicago, manufacturers of steam specialties, contains half-tone illustrations of prominent buildings throughout the country in which the devices of this company are used. It will be sent to steam users upon application. This company makes a specialty of designing and constructing regulating devices for peculiar and unusual requirements.

As a result of its success with torches aboard vessels, the Graham-Meyer Torch & Liquid Light Co. of Boston is now making a torch that is especially suited for use in rolling mills, on docks, in mines and shops and for street improvement. Alike to the torches used aboard vessels, this torch will burn brighter in the wind and is not extinguished by rain or heavy weather of any kind. It is cheap, as it sells for \$2.50, and the manufacturers say that one gallon of ordinary kerosene will last in it for nearly four hours.

The Rushmore Dynamo Works of Jersey City, N. J., is meeting with great success with its high power projectors. They are equipping a number of steamships on the coast and the lakes. Two of their eighty million candle power lights for the steamers City of Cleveland and City of Detroit are the largest on the lakes, and they have just sold a forty-million candle power light for the government steamer D. S. Lamont, replacing the Huntington light built by them, as it was shown that the lens light was nearly twenty times the power. The commercial marine, profiting by experience in the navy, is adopting high power lens projectors. The low cost of the Rushmore light places it within the reach of the mercantile marine as well as the navy.

Capt. Peter Bloomsburg of H. Bloomsburg & Co., Wilmington, Del., manufacturers of circulators and steam jets that are specially suited to use in connection with marine boilers, has returned to the east, after having made arrangements with a few vessel owners and ship builders of Cleveland, Buffalo and Detroit to introduce his company's specialties here. This company is well known on the coast, and its appliances, which are in use on the American line ships and on a great number of other vessels in the east, are said to produce a high rate of fuel economy at very low cost. Capt. Bloomsburg is well versed in everything pertaining to ships, as he now holds a captain's license that has been renewed fourteen times and an engineer's license showing twenty-seven renewals.



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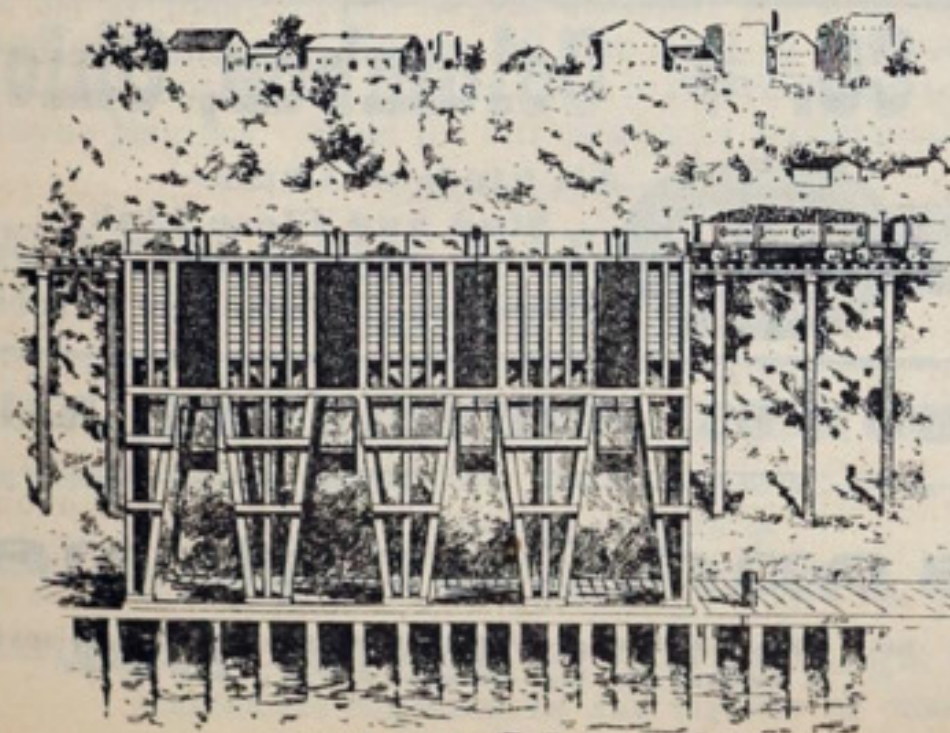
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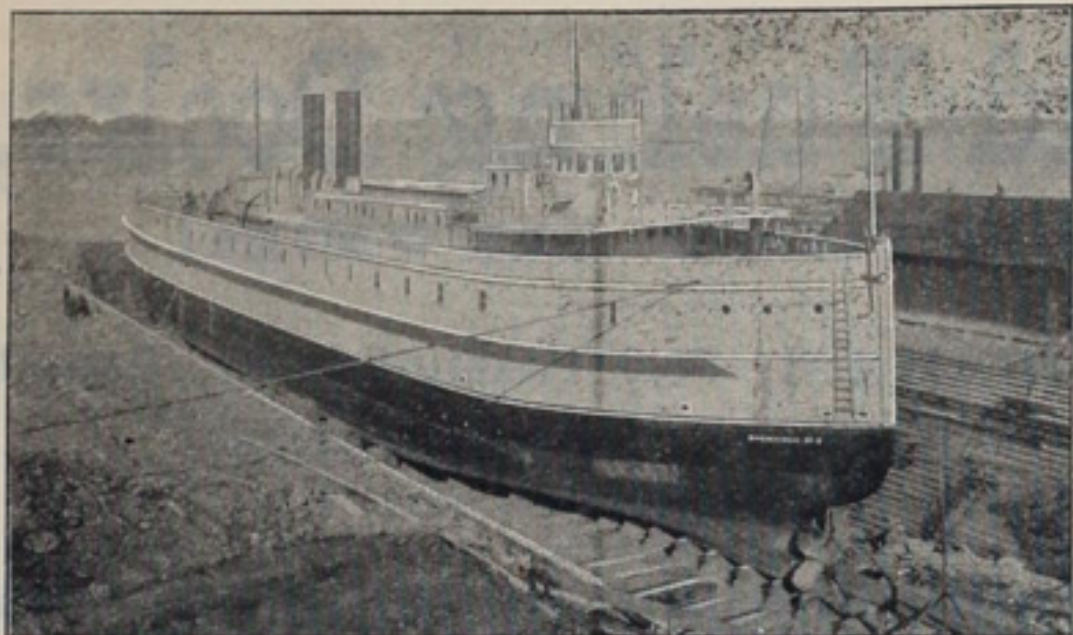
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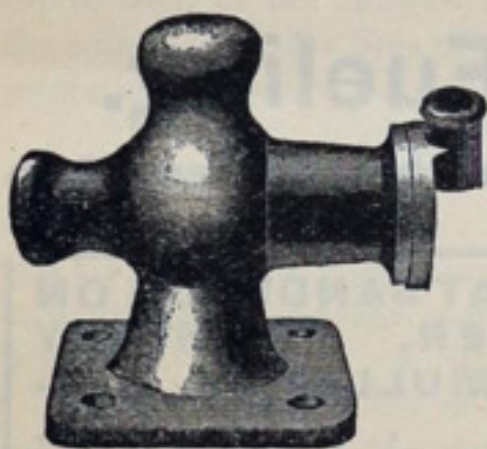
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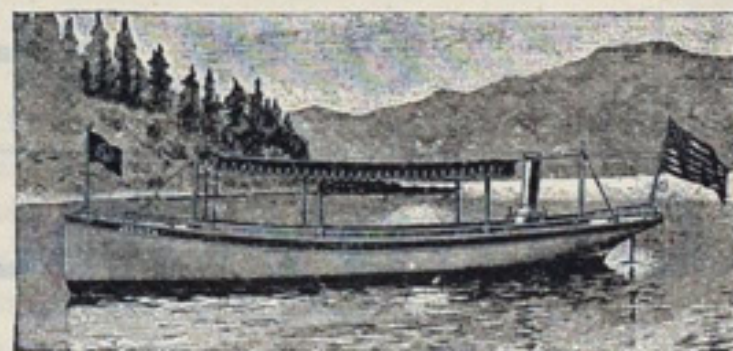
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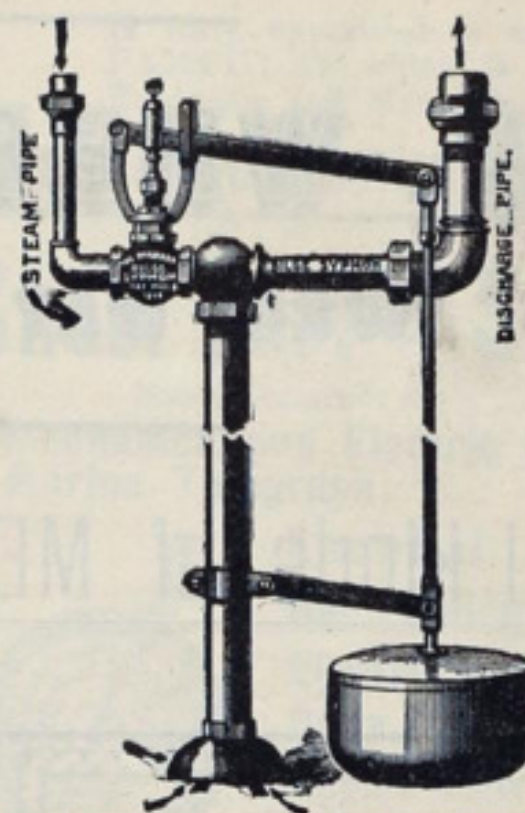
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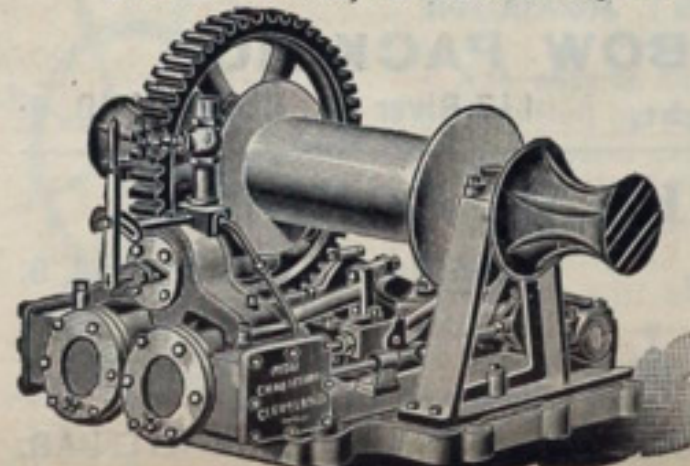
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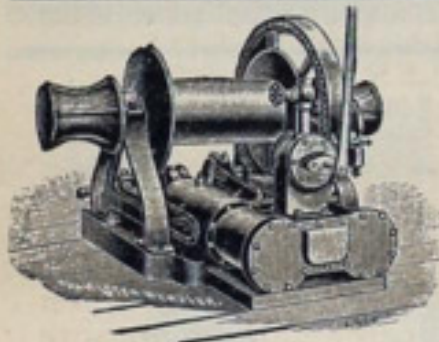
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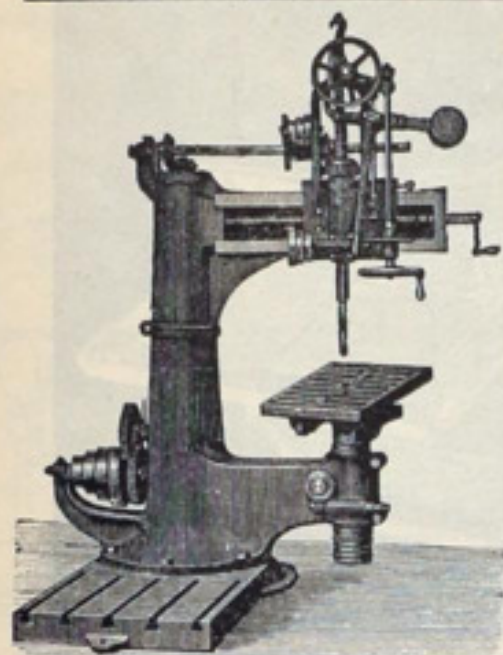
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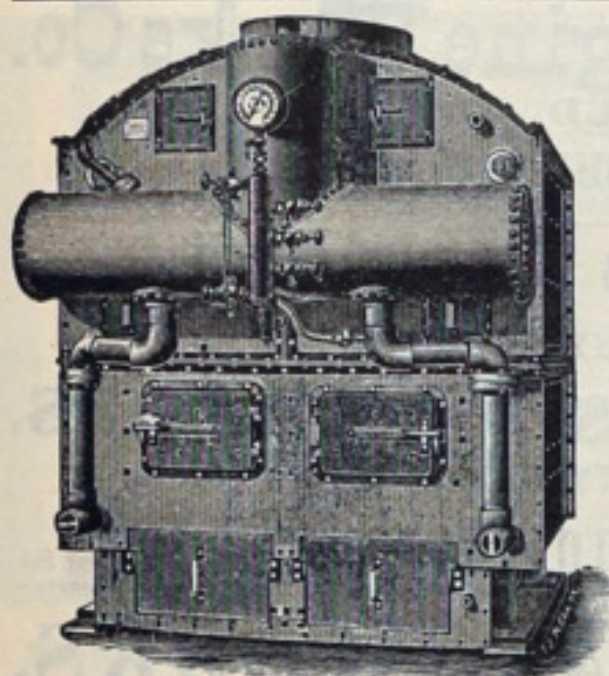
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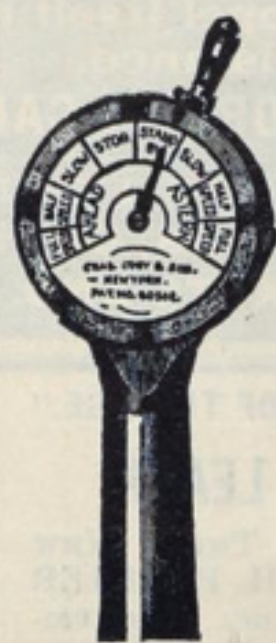
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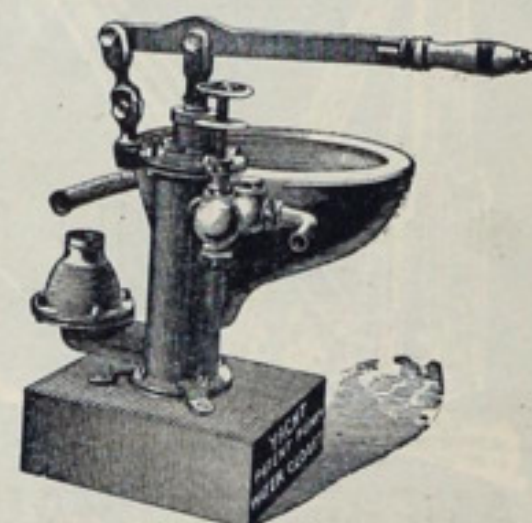
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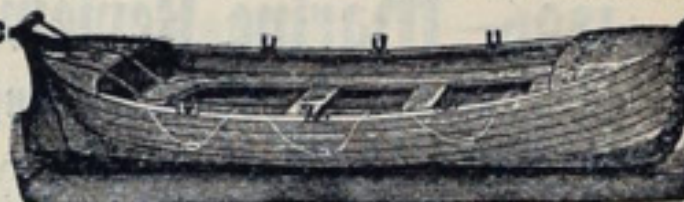
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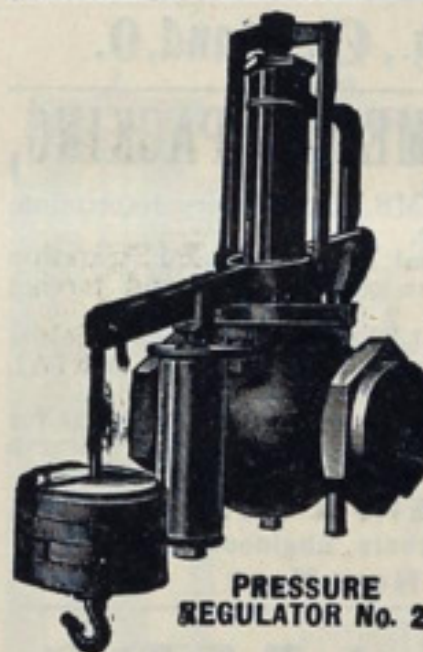
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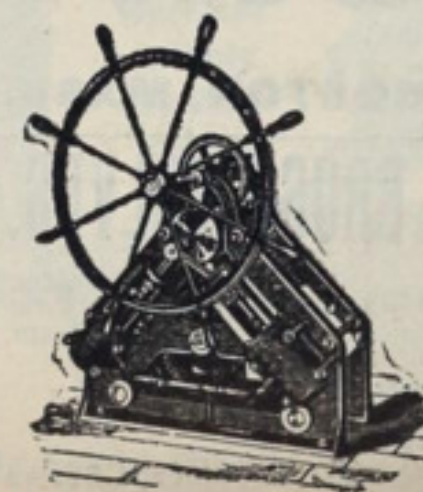
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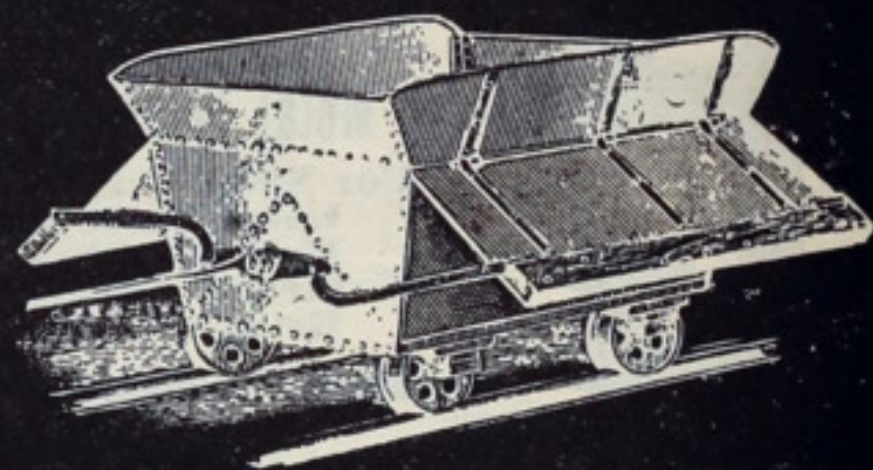
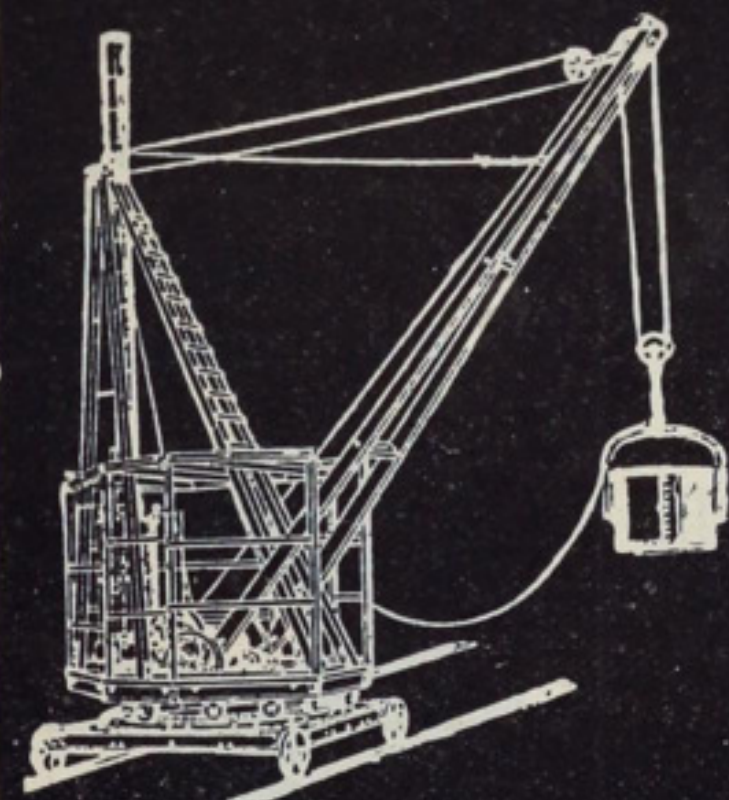
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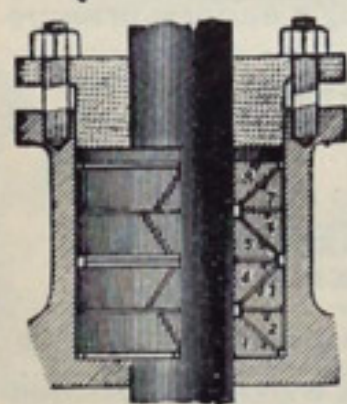
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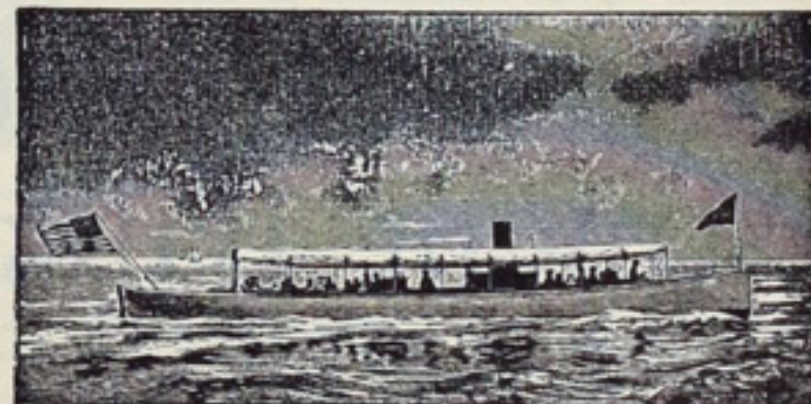
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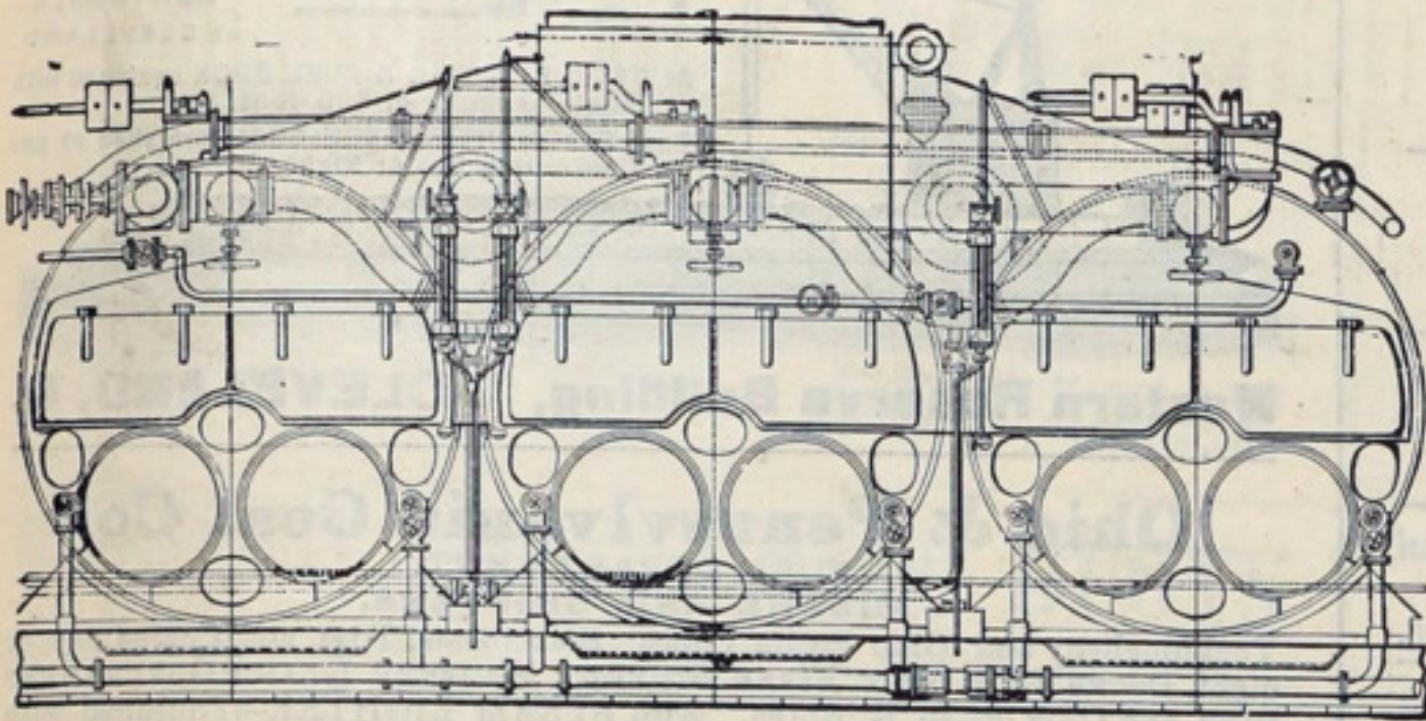
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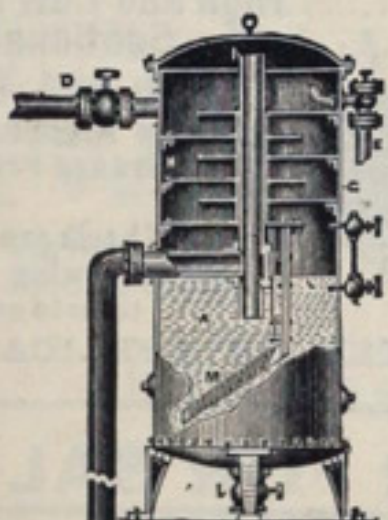
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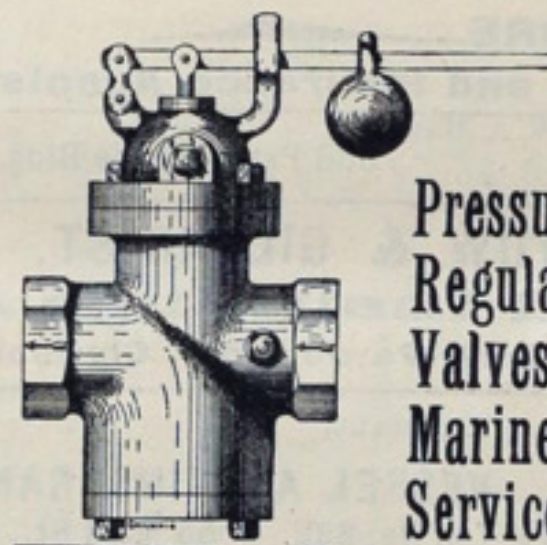
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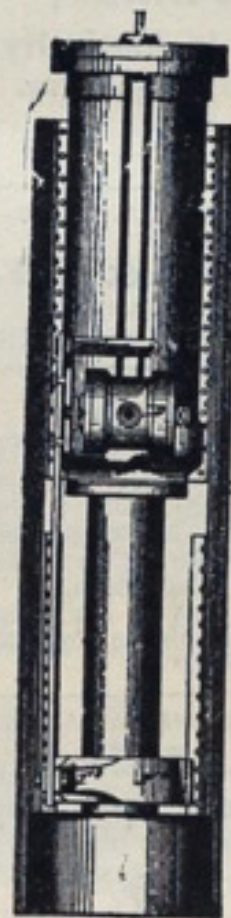
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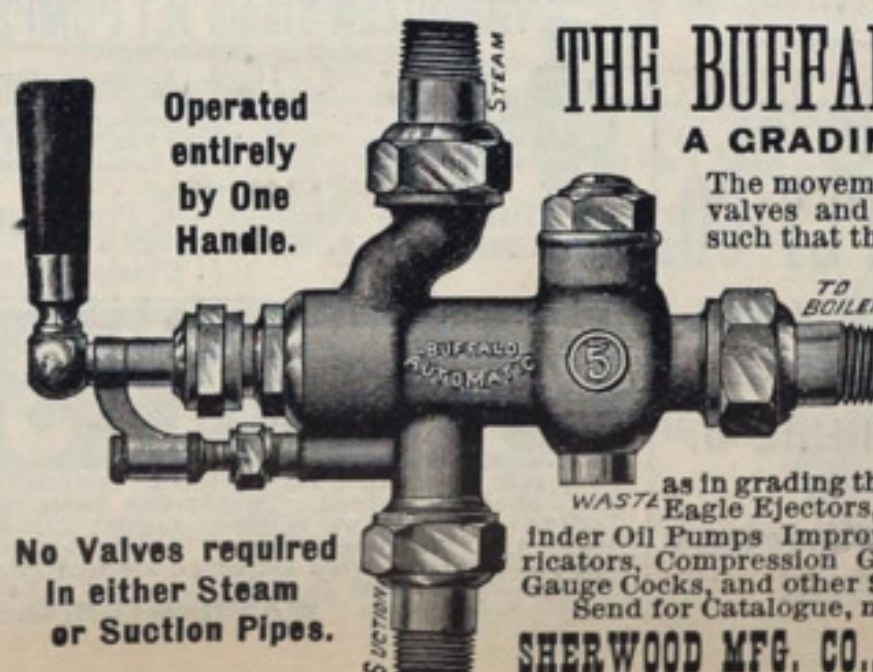
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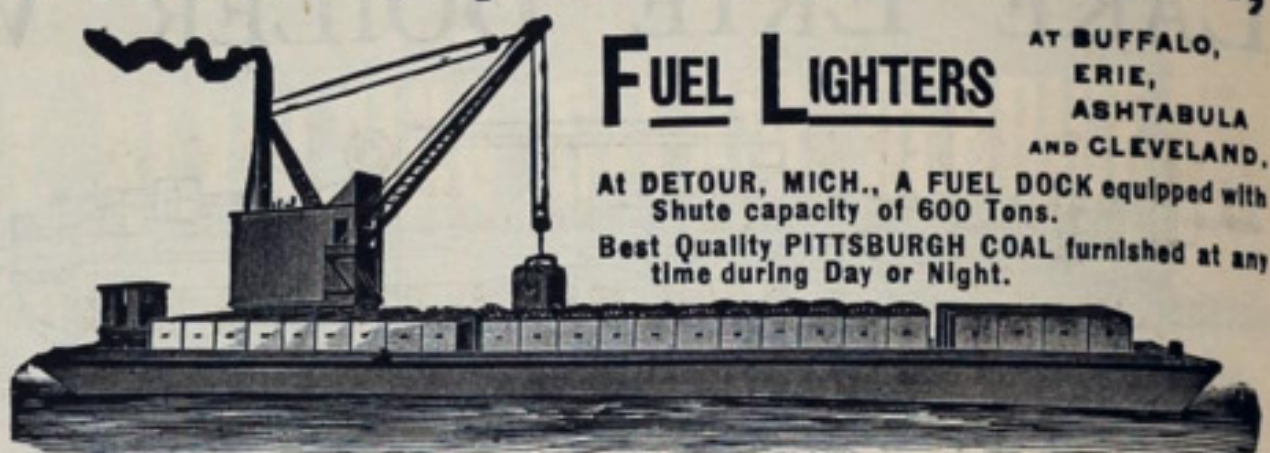
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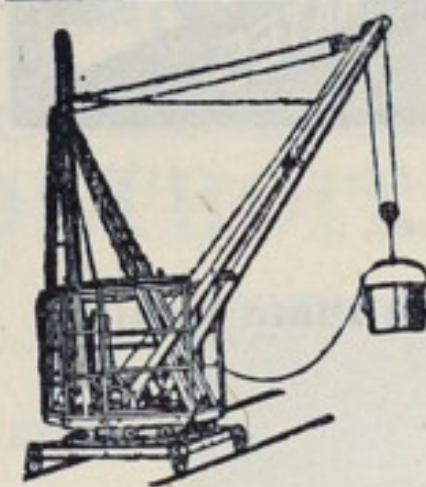
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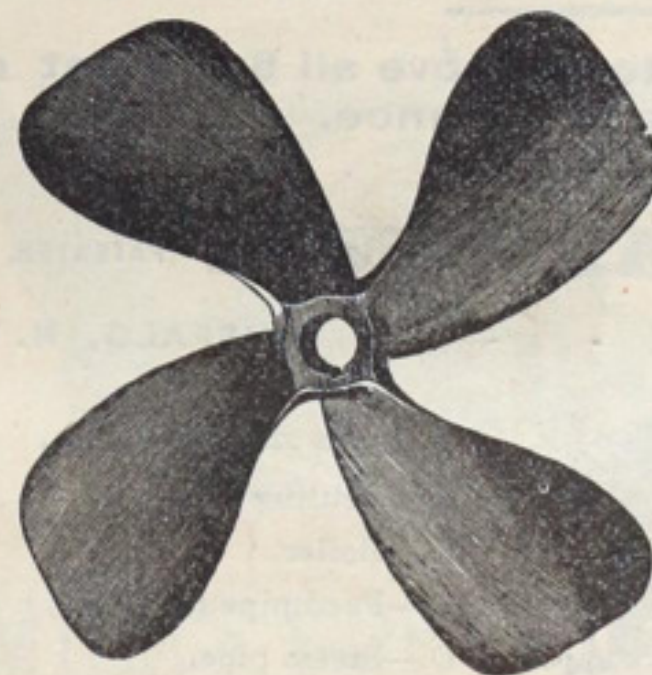


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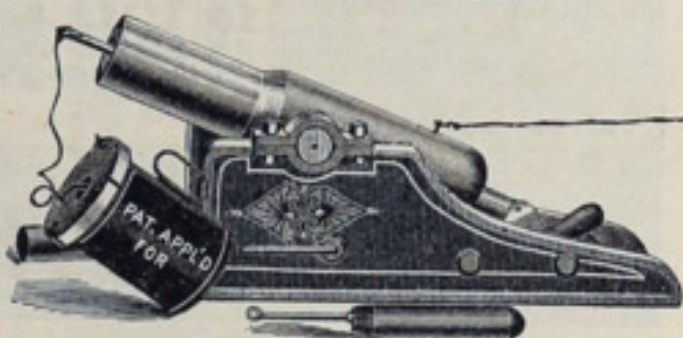
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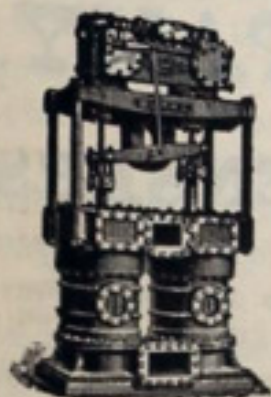
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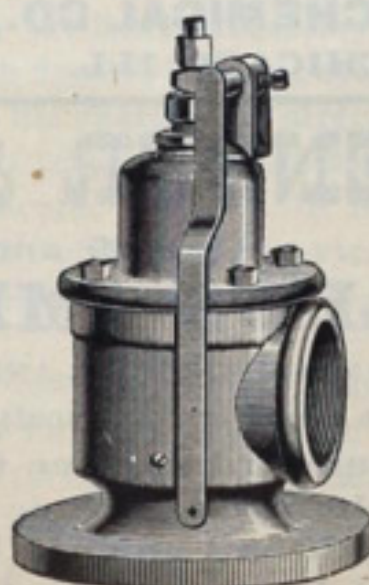
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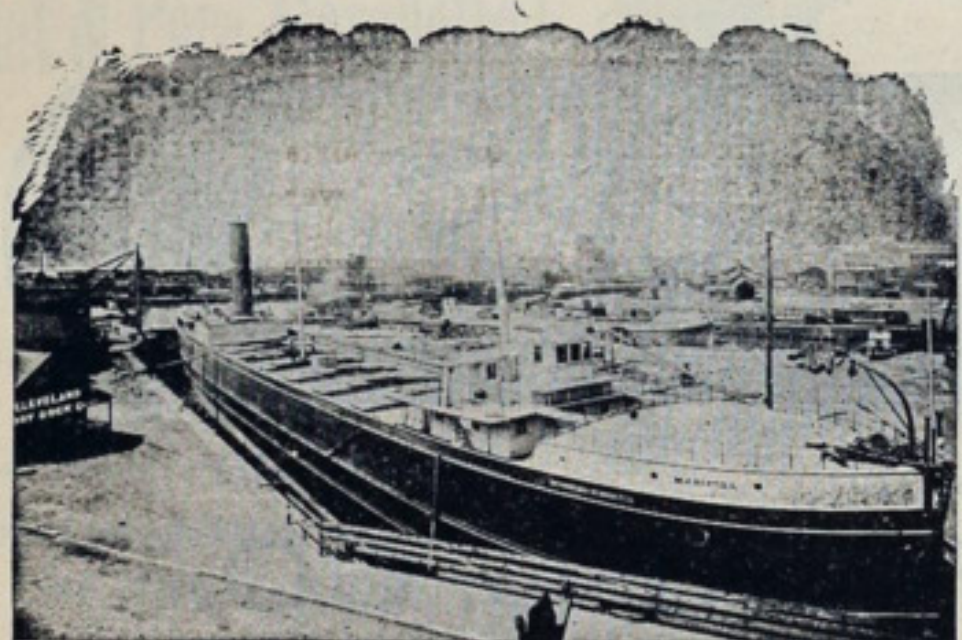
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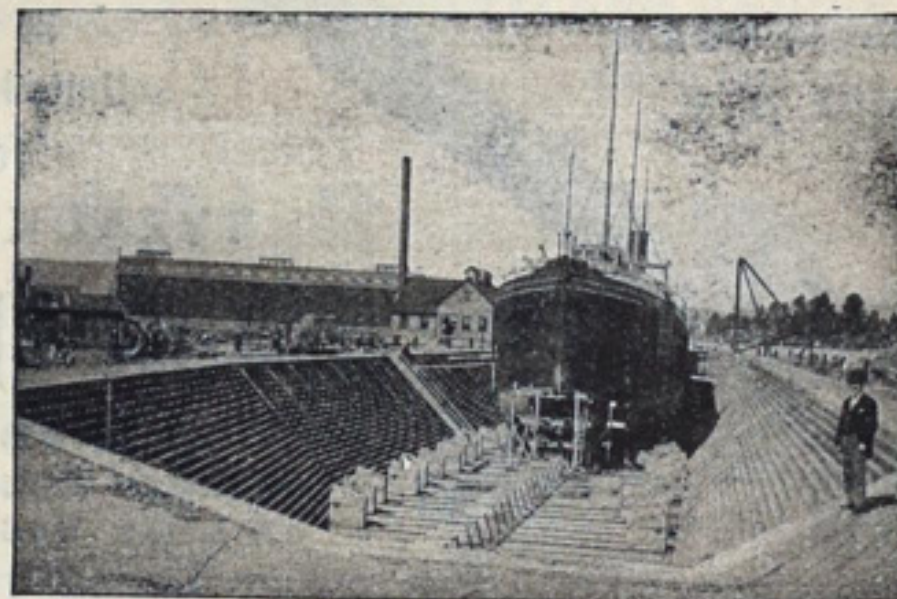
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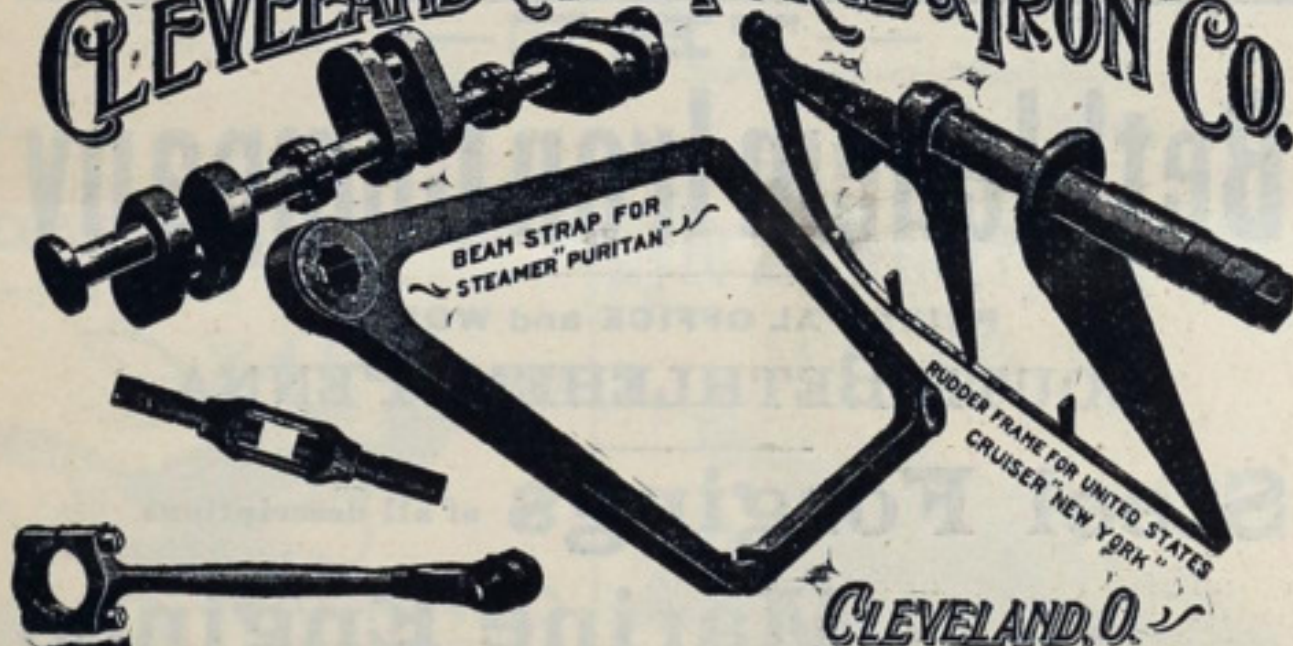
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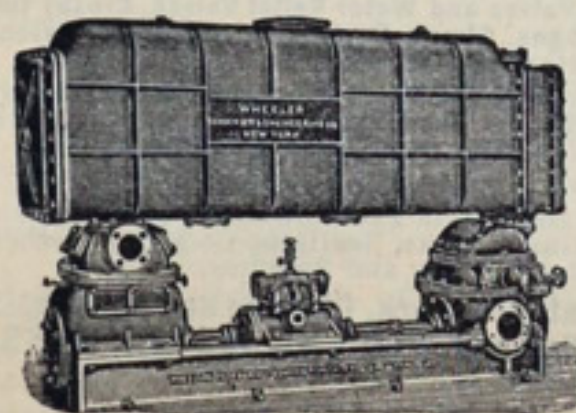
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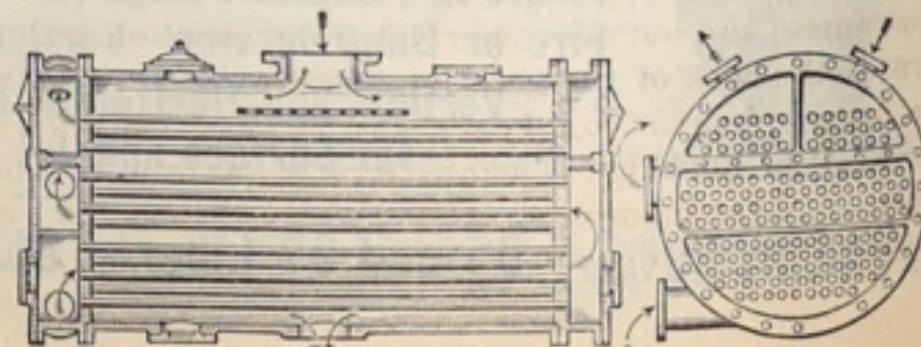
Wheeler Lighthall Surface Condenser.

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